Lesion Description

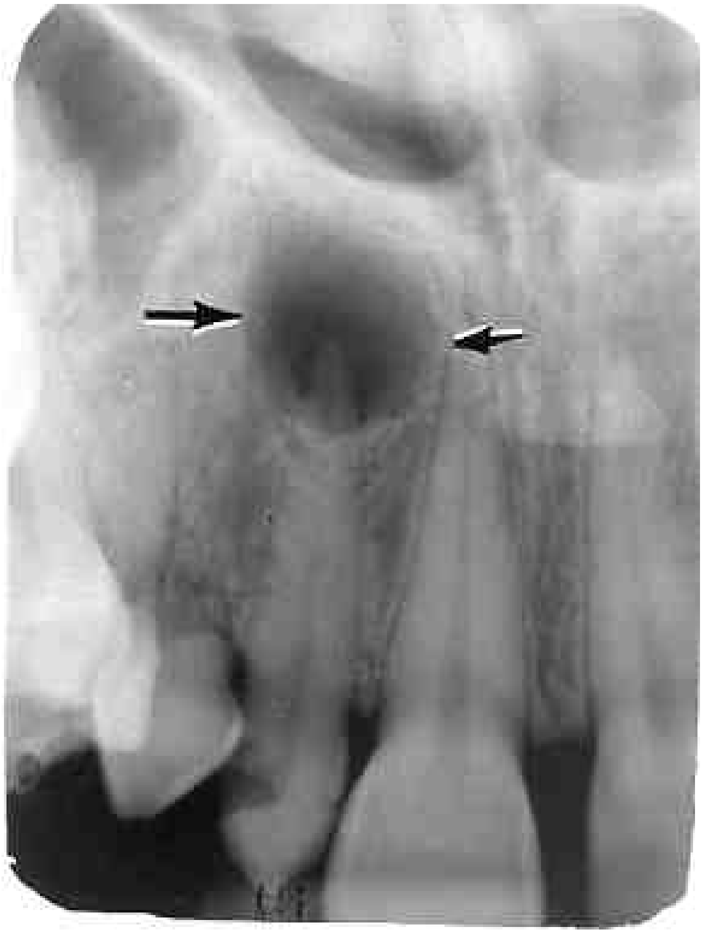


Fig. 7-1

Well-defined radiolucent lesion at the apex of the maxillary lateral incisor. The circumscribed radiopaque (sclerotic) border signifies that the lesion is self-contained, enlarges by expansion, and is slow-growing. There is no change in the surrounding bone.

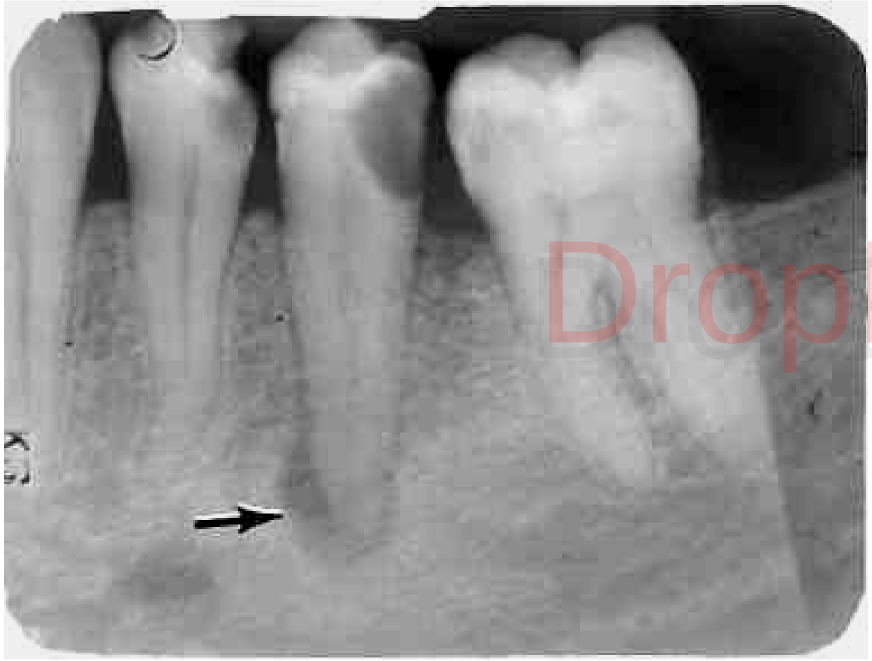


Fig. 7-2

Well-defined radiolucent lesion at the apex of the mandibular left second premolar. The well-defined border signifies that the lesion is self-contained, and enlarges by expansion. The surrounding bone shows slight sclerosis (osteoblastic activity) which signifies resistance to the pathologic process.

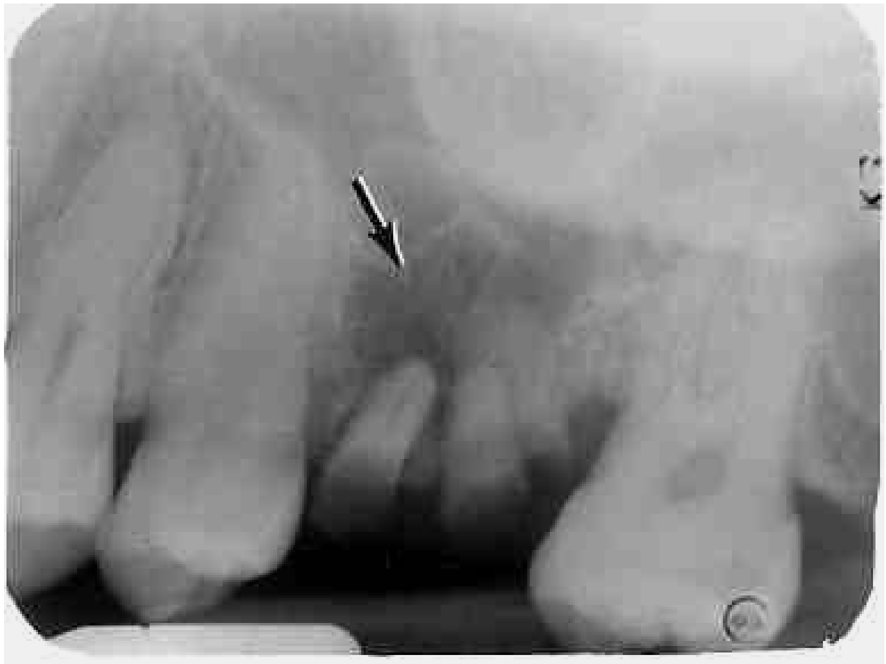


Fig. 7-3

A radiolucent lesion with diffuse, irregular borders at the apices of the roots of the maxillary left first molar. The diffuse margins, and the porosity (osteolytic activity) in surrounding bone signify an invasive process.

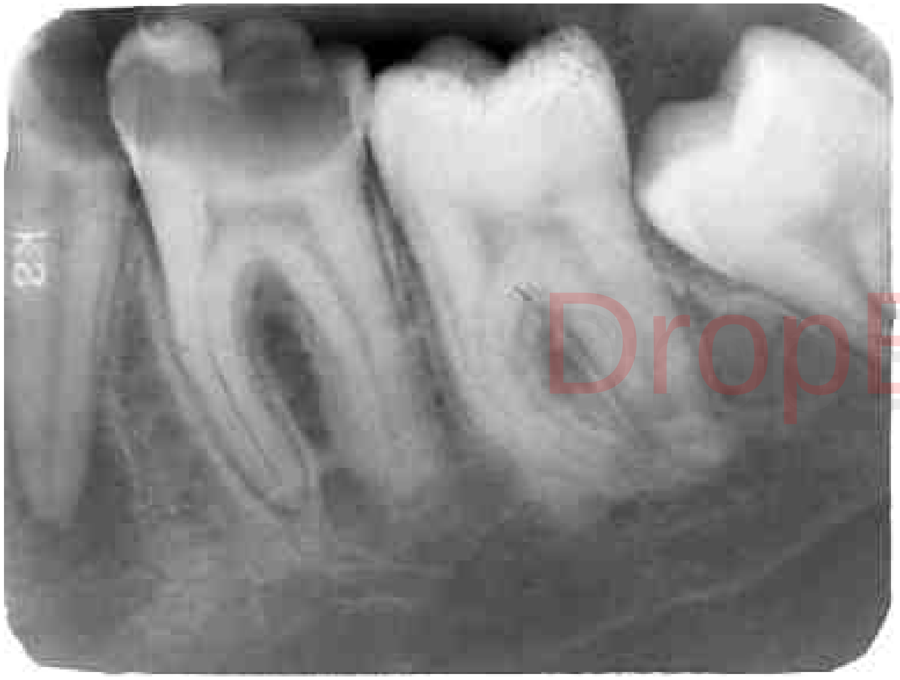


Fig. 7-4

Infection (caries) is the cause of the widened periodontal space of the first molar (apical periodontitis). In this case, the lamina dura is also thickened (radiopaque line).

Periodontal Space Widening (Apical Periodontitis)

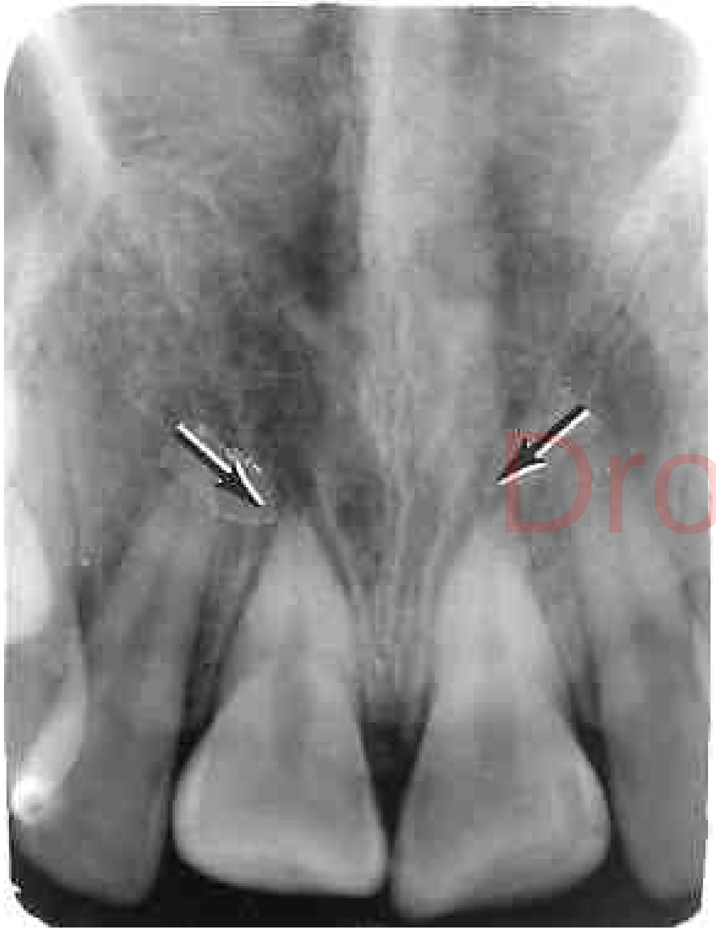


Fig. 7-5

Trauma is the cause of the widened periodontal spaces of the central incisors (apical periodontitis. Clinically, the teeth were retruded.

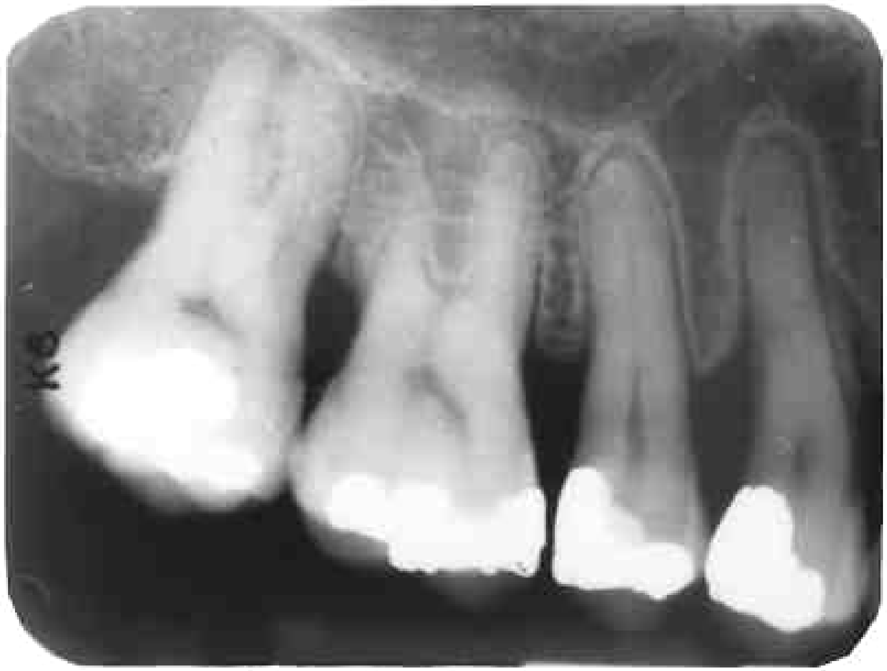


Fig. 7-6

Traumatic occlusion, that is, premature contact with the opposing premolars, is the cause of the widened periodontal spaces of the maxillary premolars (apical periodontitis). The patient also has alveolar bone loss due to periodontal disease.

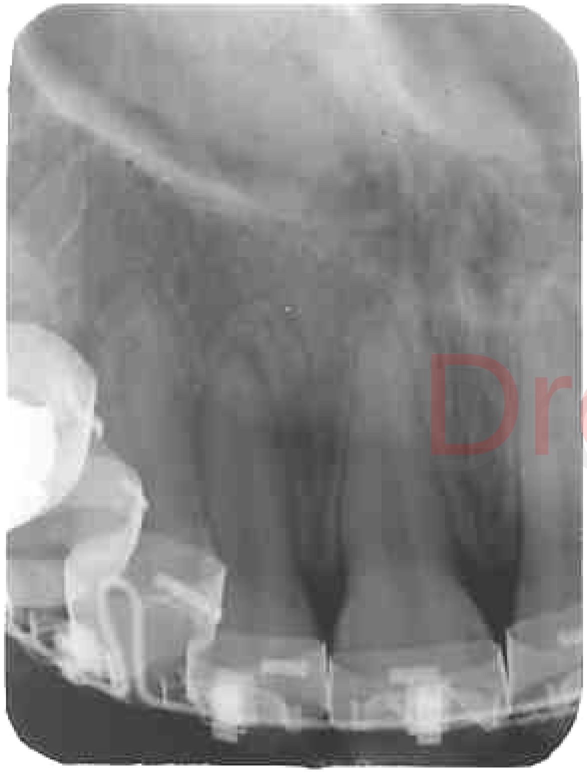


Fig. 7-7

Orthodontic treatment is the cause of the widened periodontal spaces of the incisors.

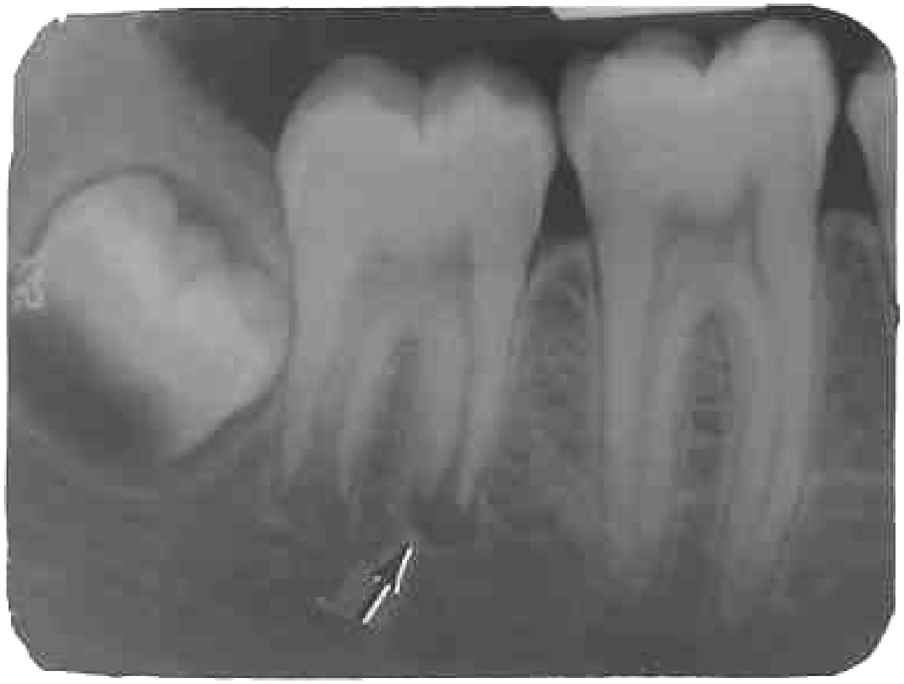


Fig. 7-8

Developing root apices of the second molar may be mistaken for widened periodontal spaces. Root apices complete their formation approximately one to two years after tooth eruption.

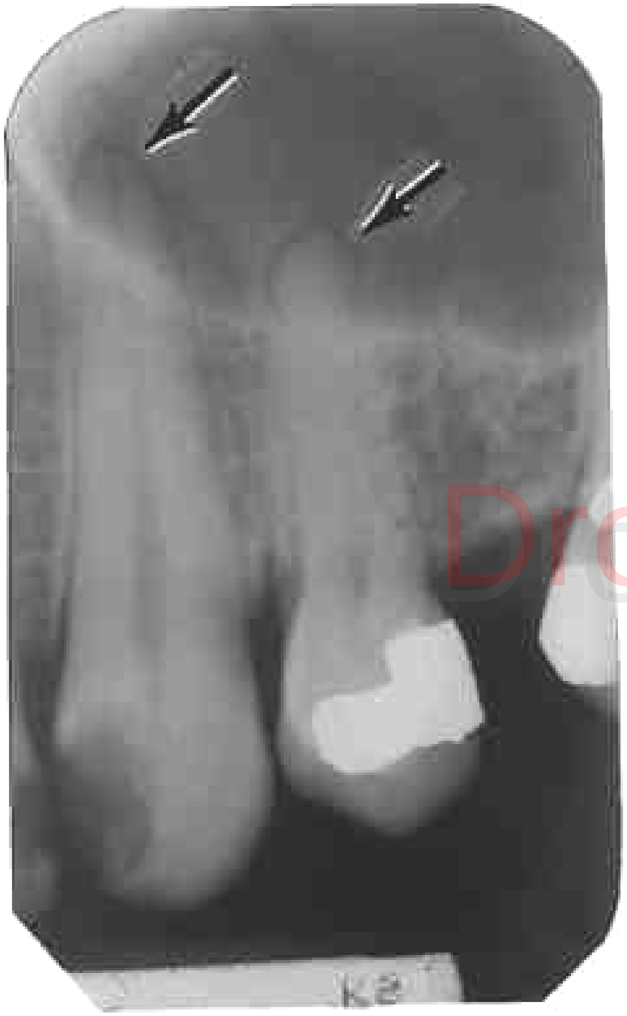


Fig. 7-9

Illusion of widened periodontal space of the root apex of the premolar because of superimposition on a radiolucent anatomy (maxillary sinus). The widened periodontal space of the canine may be due to a similar illusion and/or infection (caries). Also note the illusion of loss of apical lamina dura on both teeth.

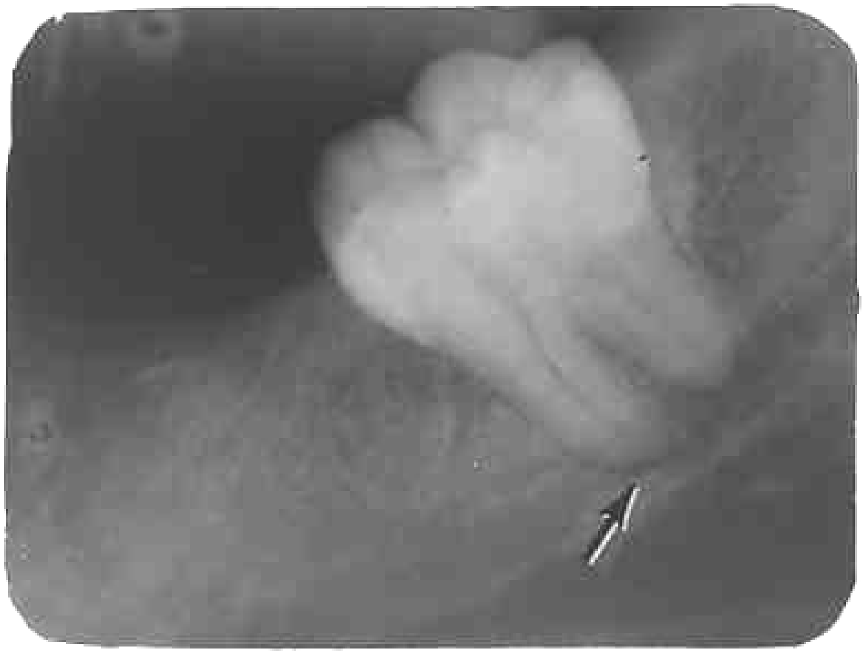


Fig. 7-10

Illusion of widened periodontal spaces of the root apices of the molar because of superimposition on a radiolucent anatomy (mandibular canal). Also note the illusion of apical loss of lamina dura.

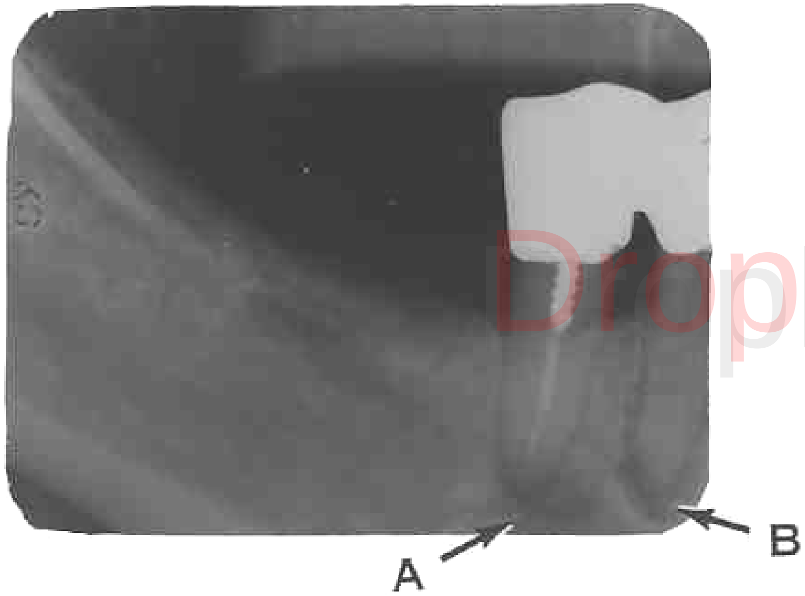


Fig. 7-11

A — Mental foramen. Notice the intact periodontal space.

B — Chronic inflammatory apical lesion. Notice the loss of the apical periodontal space.

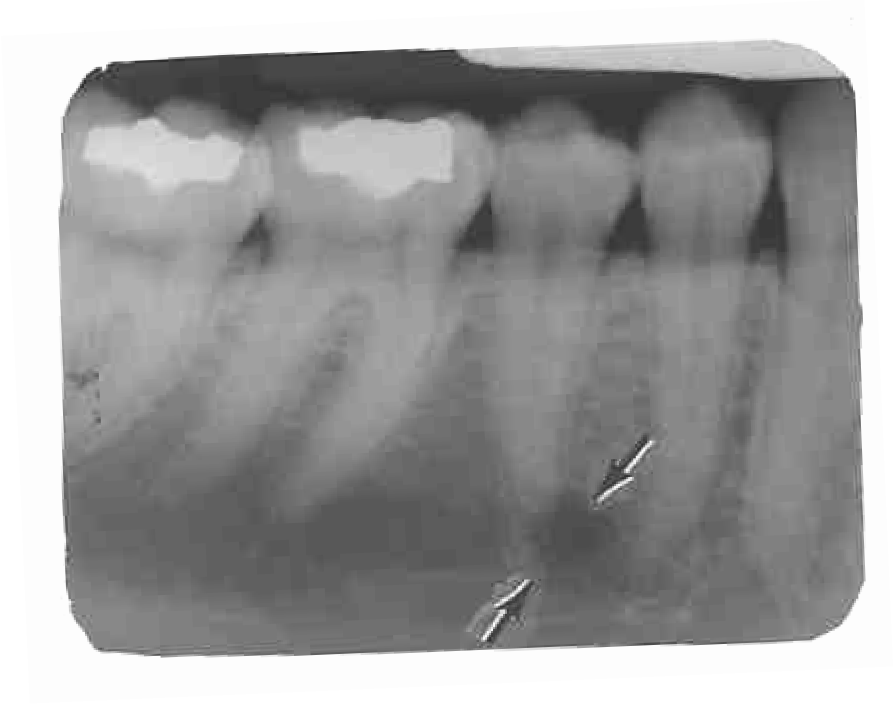


Fig. 7-12

Radiolucent anatomy mistaken for an apical lesion. Mental foramen superimposed on the root apex of the second premolar may be mistaken for an apical lesion.

Periapical granuloma

Radicular cyst

Apical abscess

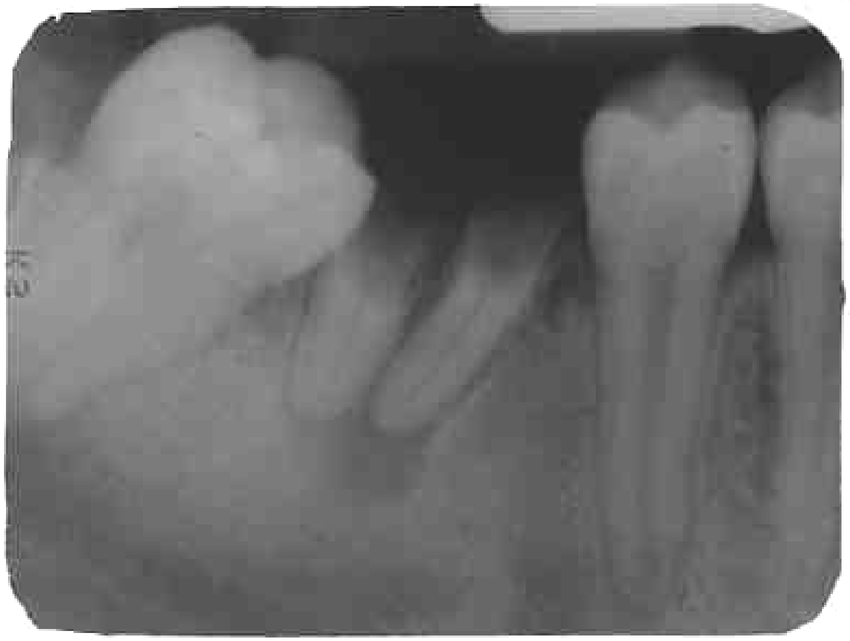


Fig. 7-13

Presence of either a periapical granuloma, a radicular cyst or an abscess at the root apices of the first molar. The small, well-defined radiolucency is suggestive (on a speculative basis) of a periapical granuloma. Periapical granulomas are the most frequently occurring of the three pulpo-periapical lesions. The involved tooth is nonvital.

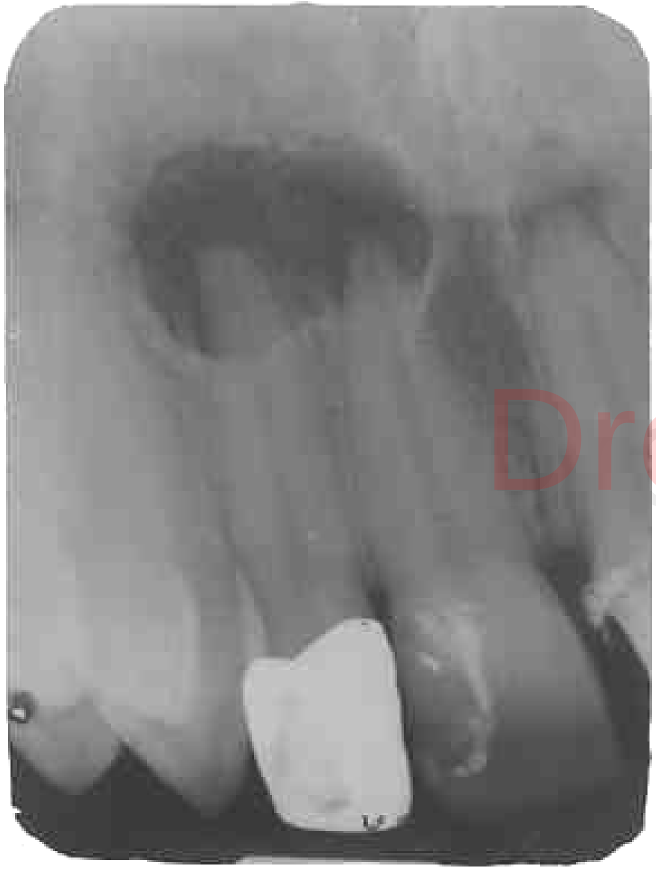


Fig. 7-14

Presence of either a periapical granuloma, a radicular cyst or an abscess at the root apices of the right central and lateral incisors. The large, well-defined radiolucency with a radiopaque (sclerotic) border is suggestive (on a speculative basis) of a radicular cyst (periapical cyst). Radicular cysts are the second most frequently occurring of the three pulpo-periapical lesions. The involved tooth is nonvital.

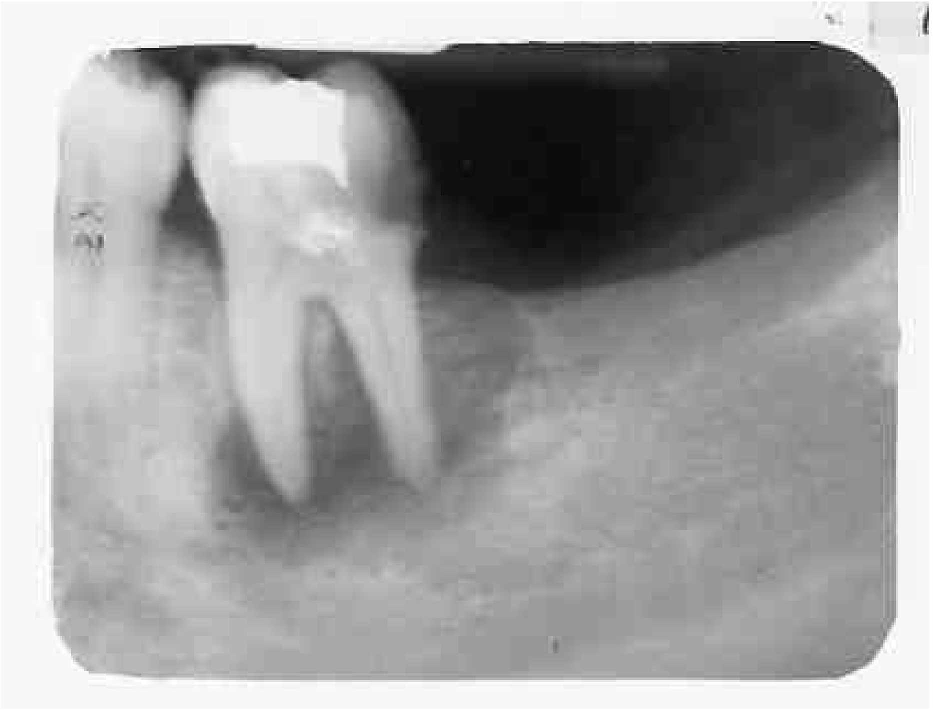


Fig. 7-15

Presence of either a periapical granuloma, a radicular cyst or an abscess at the root apices of the first molar. The large radiolucency with diffuse irregular border is suggestive (on a speculative basis) of an abscess. Apical abscesses are the least frequently occurring of the three pulpo-periapical lesions. The involved tooth is nonvital.

Apical scar

Surgical defect

Periodontal disease

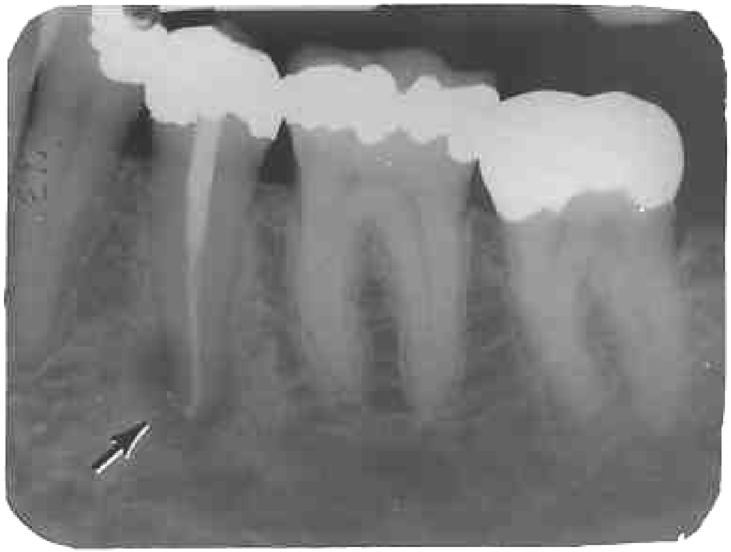


Fig. 7-16

Apical scar is an area at the apex of a tooth that fails to fill in with osseous tissue after endodontic treatment. The second premolar was successfully treated with root canal therapy. The apical radiolucency persisted after treatment. Patient was recalled after several months. The radiolucency slightly decreased in size but was still present.

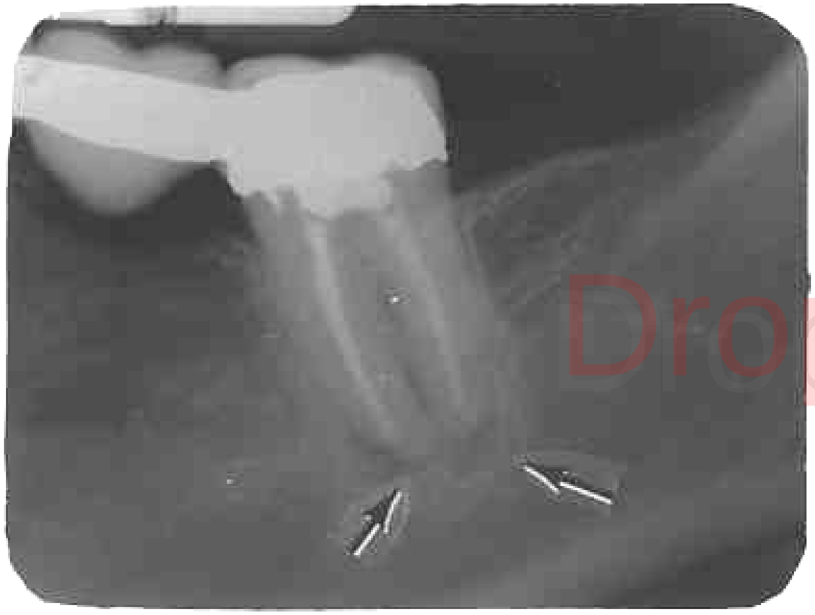


Fig. 7-17

Apical scar. The molar was successfully treated with root canal therapy. Patient was recalled after several months. The apical radiolucency reduced in size and persisted.

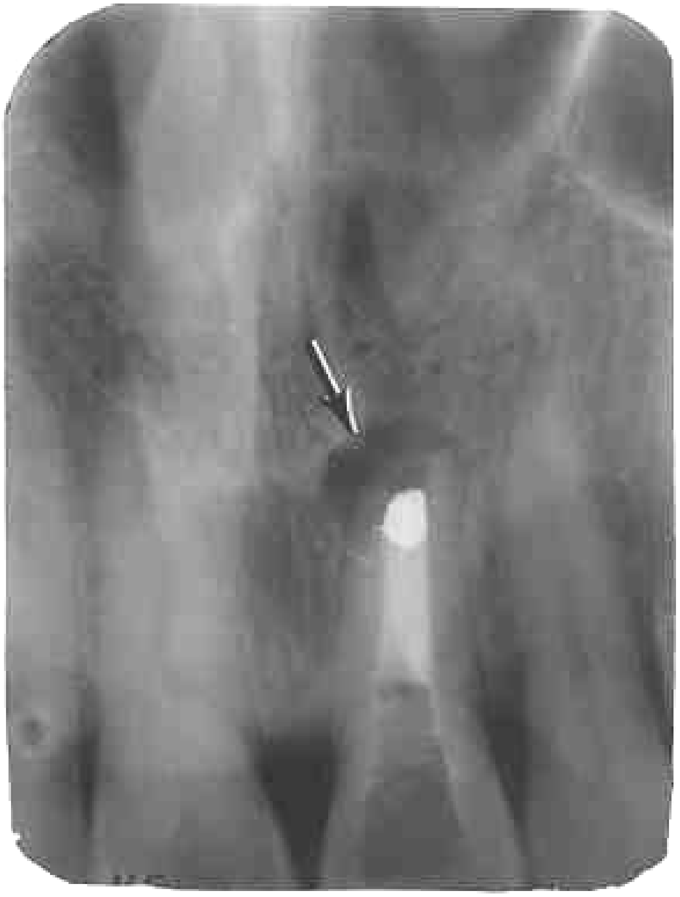


Fig. 7-18

Surgical defect in bone is an area that fails to fill in with osseous tissue after surgery. An apicoectomy was performed at the apex of the left central incisor and the lesion was curetted. The radiolucency persisted as a surgical defect.

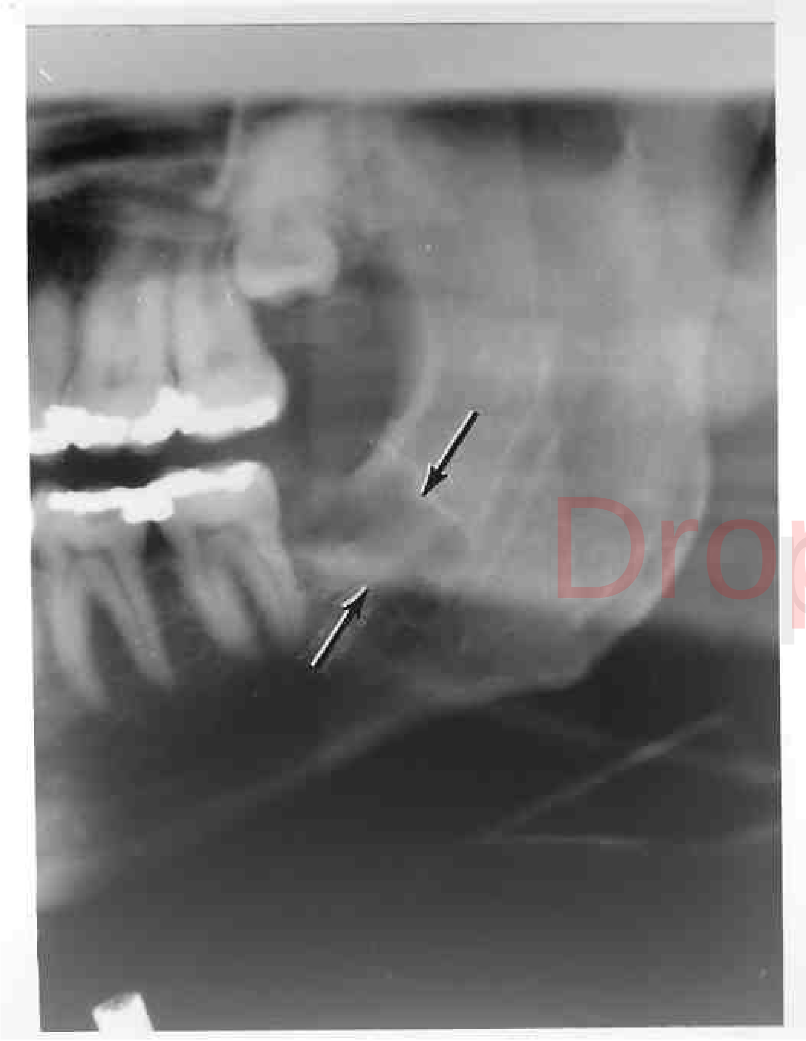


Fig. 7-19

Surgical defect at the extraction site of the mandibular third molar. The radiolucency of the tooth socket persisted after 1 year.

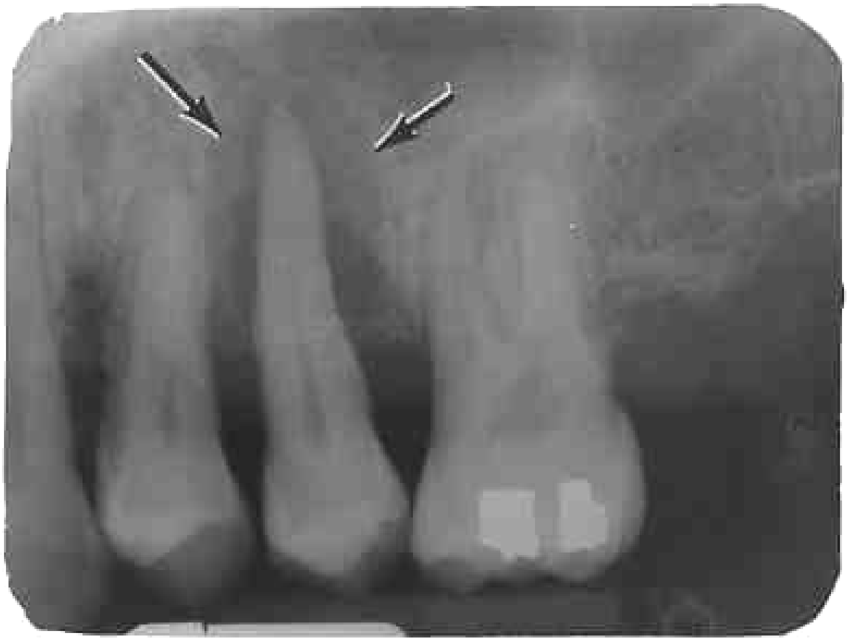


Fig. 7-20

Periodontal disease producing a periapical radiolucency. Vertical bone loss around the second premolar extends to the apex and appears as a fairly well-defined radiolucency. The affected tooth is vital.

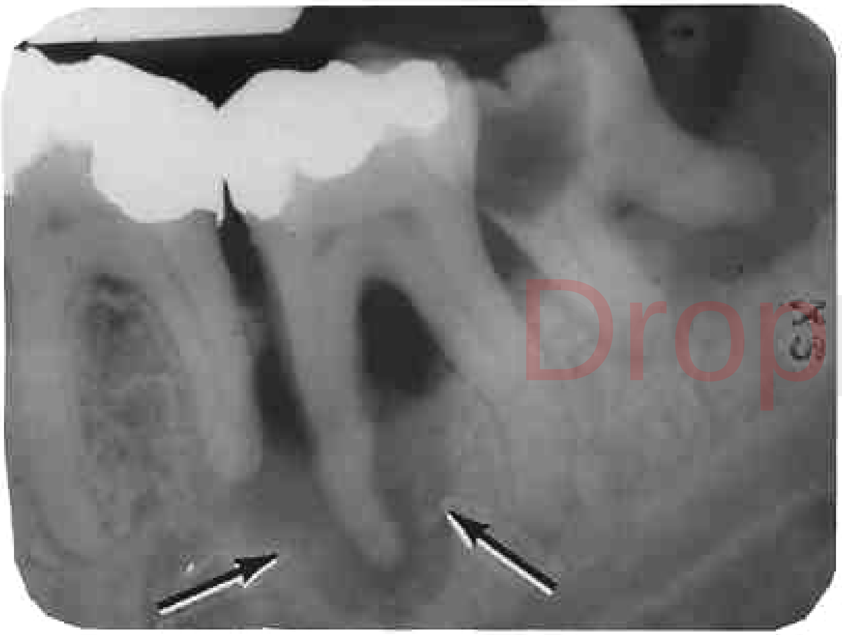


Fig. 7-21

Periodontal disease producing a periapical radiolucency around the mesial root of the second molar. Vertical bone loss extends to the apex of the root. The affected tooth is vital.

Condensing osteitis (sclerosing osteitis)

Osteosclerosis (enostosis, dense bone island)

Socket sclerosis

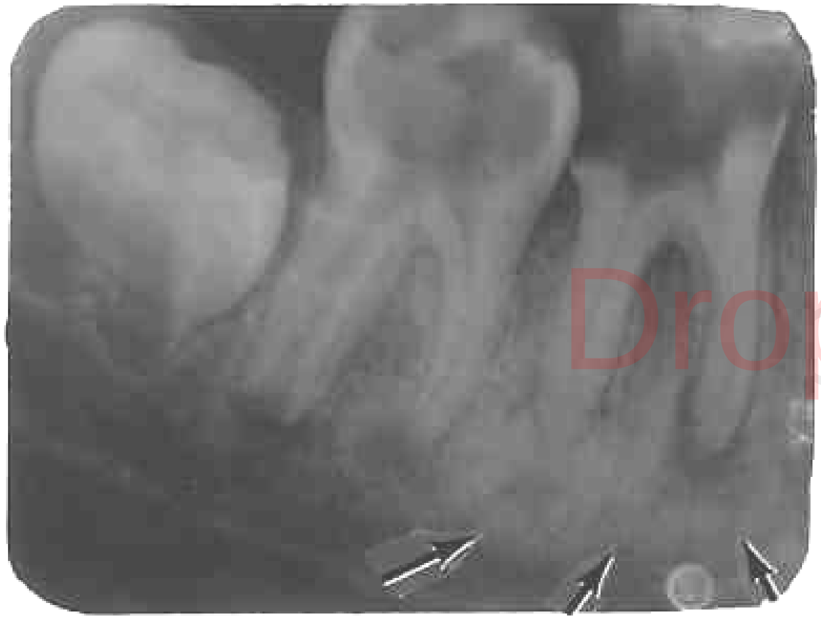


Fig. 7-22

Condensing osteitis at the root apices of the carious first molar. Condensing osteitis is a reaction to an inflammatory process. Note the diffuse radiopacities (condensing osteitis) surrounding the apical radiolucencies (rarefying osteitis). The involved tooth is nonvital.

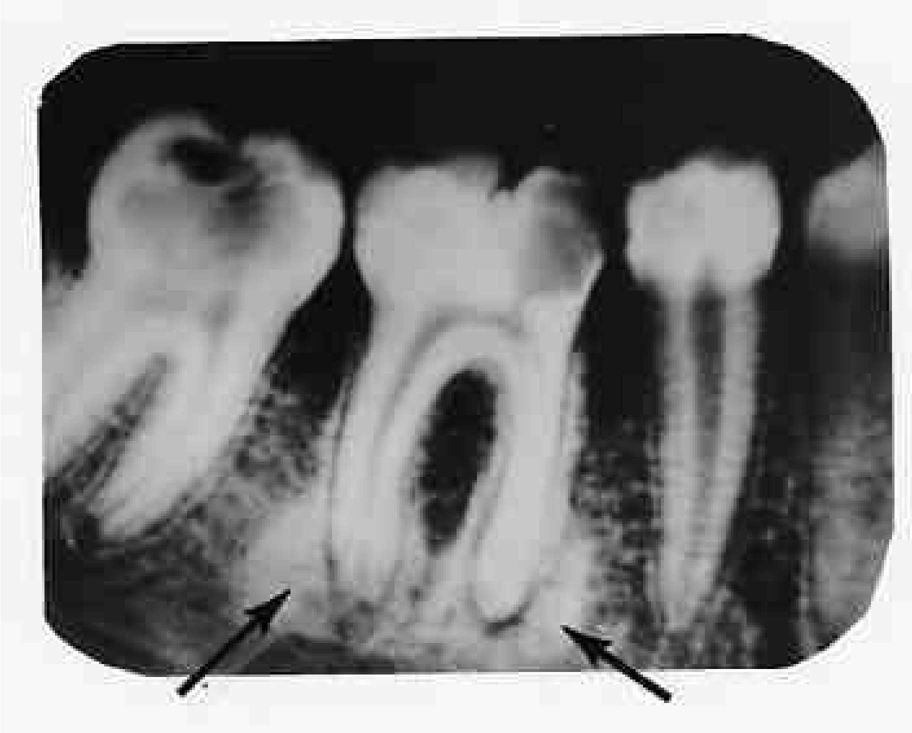


Fig. 7-23

Condensing osteitis at the root apices of the carious first molar. Note the diffuse radiopacities (condensing osteitis) surrounding the apical radiolucencies (rarefying osteitis). The involved tooth is nonvital.

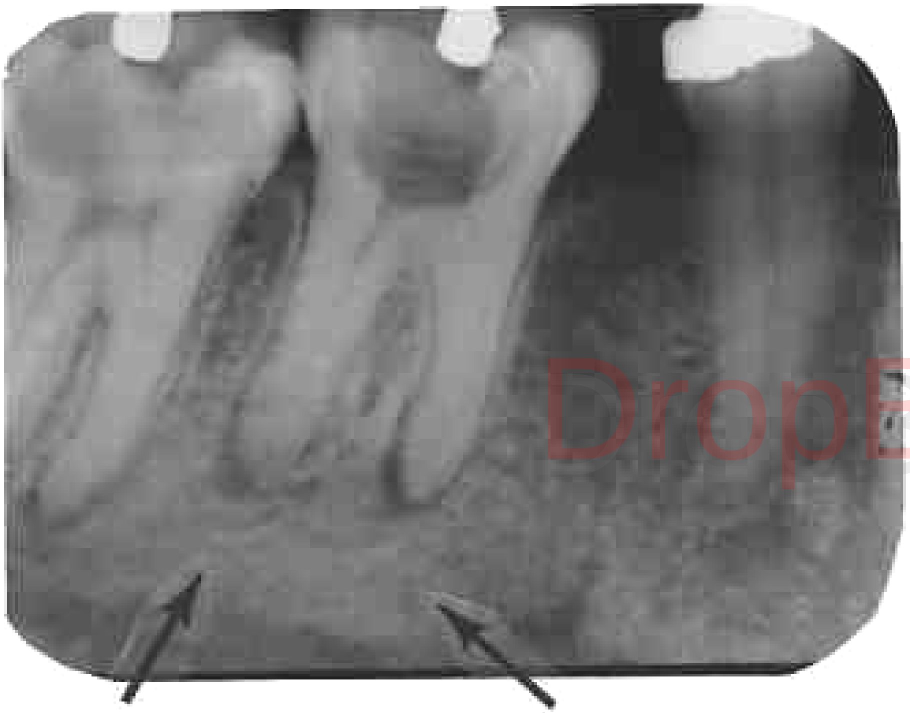


Fig. 7-24

Condensing osteitis at the root apices of the carious first and second molars. The involved teeth are nonvital.

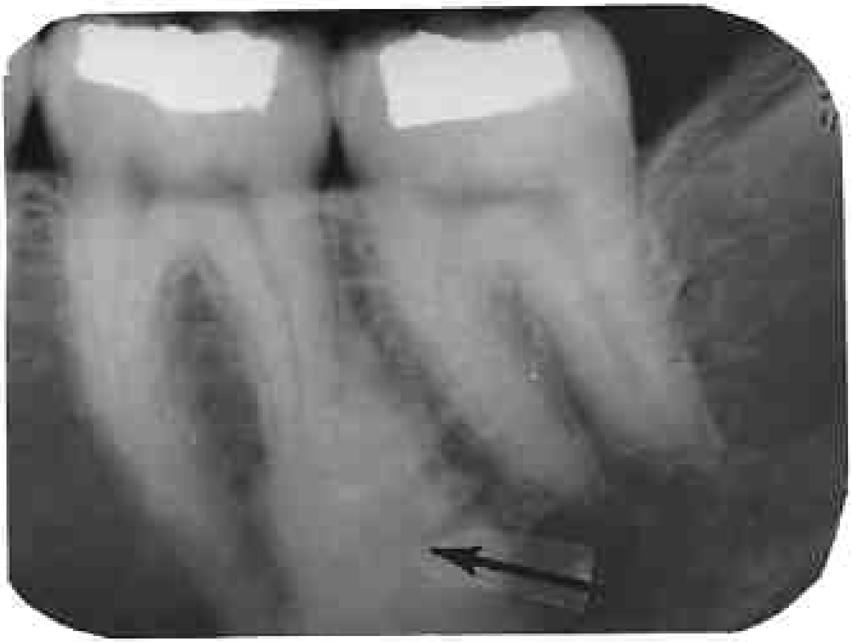


Fig. 7-25

Osteosclerosis at the root apices of the first molar. The involved tooth is vital.

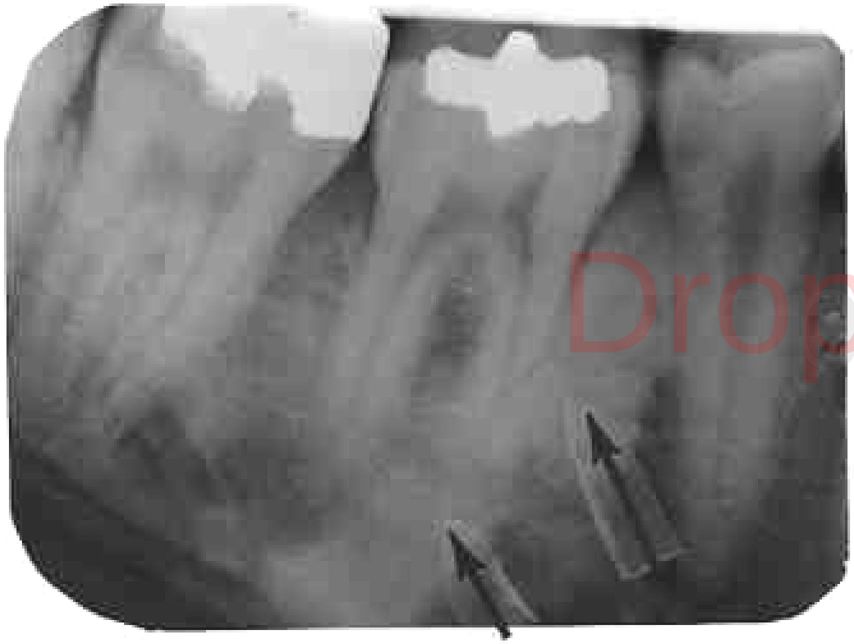


Fig. 7-26

Osteosclerosis between the second premolar and first molar, and at the mesial root apex of the first molar. The involved tooth is vital. 10% to 12% of the patients show root resorption.

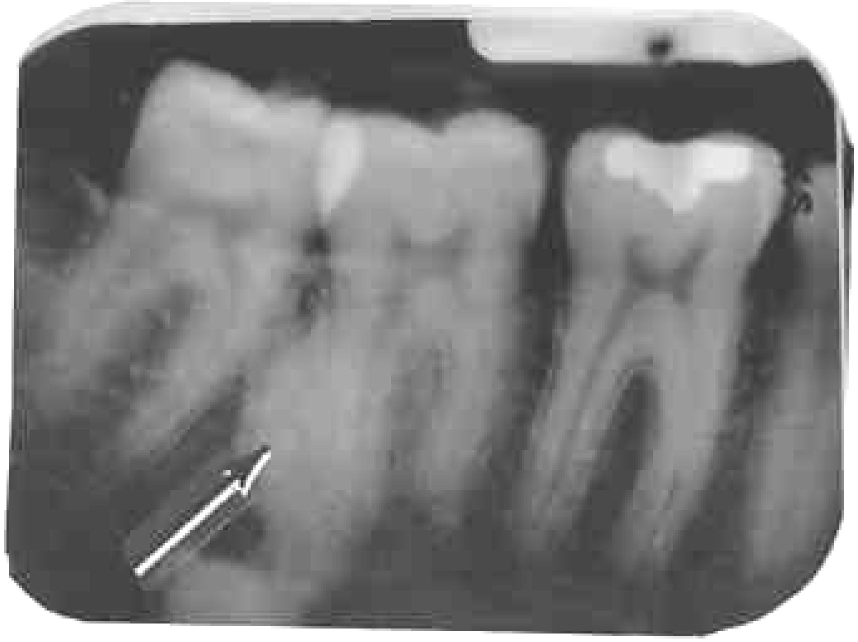


Fig. 7-27

Osteosclerosis at the distal root of the second molar.

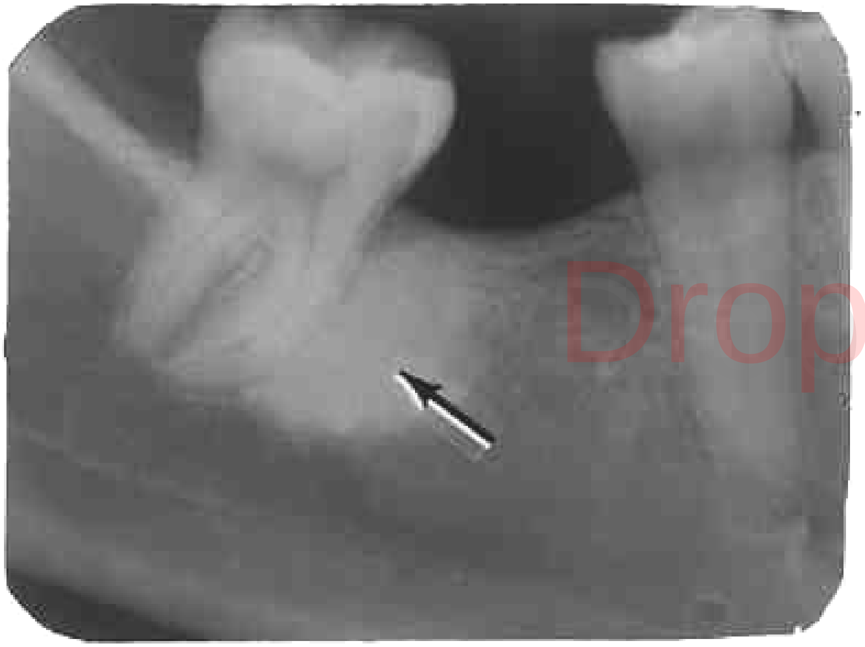


Fig. 7-28

Osteosclerotic bone to the mesial of the molar, preventing the tooth from further tilting or drifting.

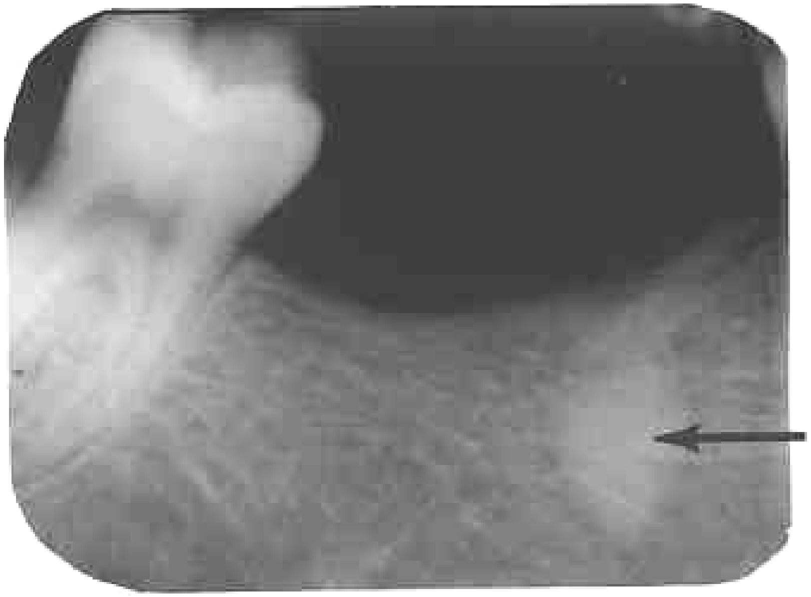


Fig. 7-29

Socket sclerosis. Sclerosing bone deposited in the socket of the extracted tooth. A dentist may be erroneously accused of having failed to extract the root. There are no definite radiographic criteria of distinguishing a retained root from a socket sclerosis.

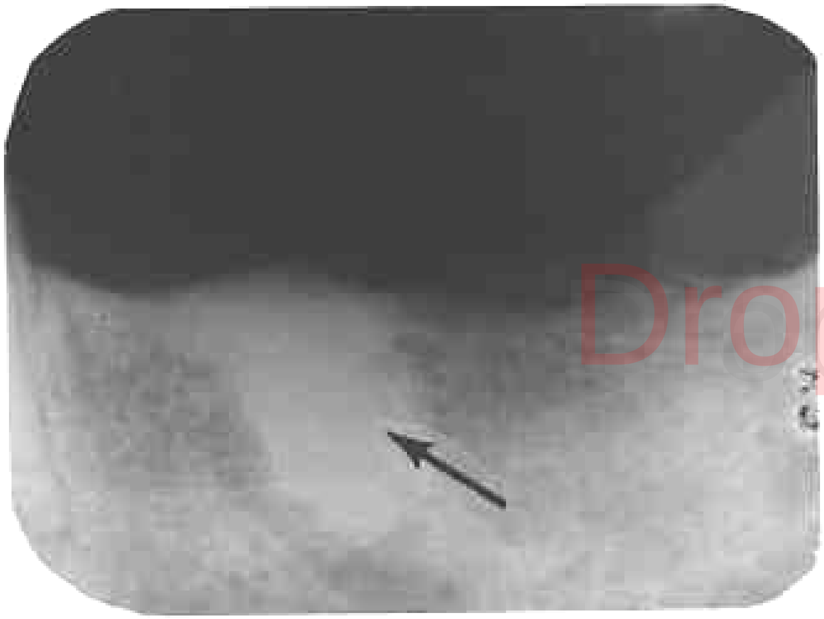
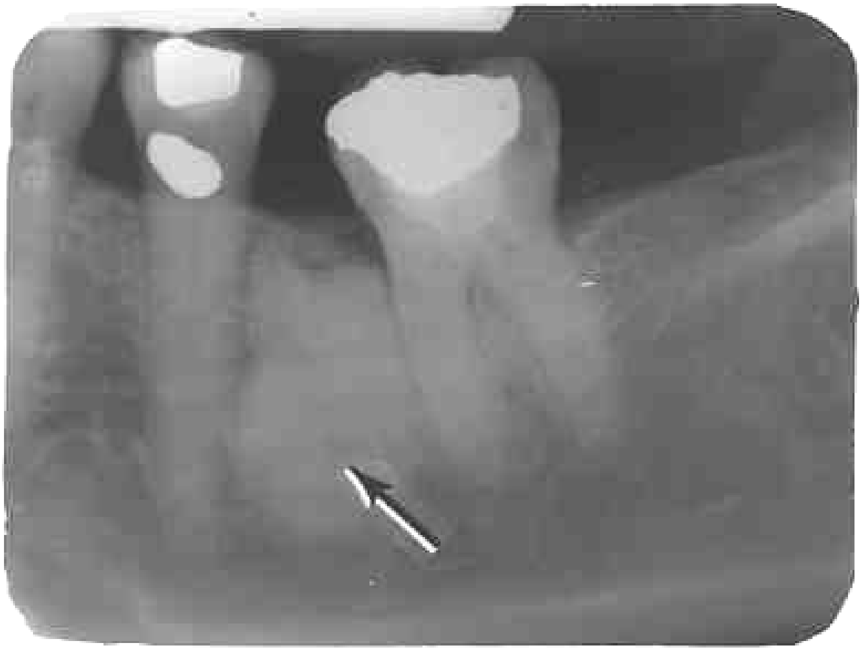


Fig. 7-30

Socket sclerosis. Although there are no definite radiographic criteria of distinguishing a retained root from a socket sclerosis, in this case, the diffuse border distinguishes socket sclerosis from a retained root.

Fig. 7-31



Socket sclerosis between the second premolar and the mesially drifted second molar.

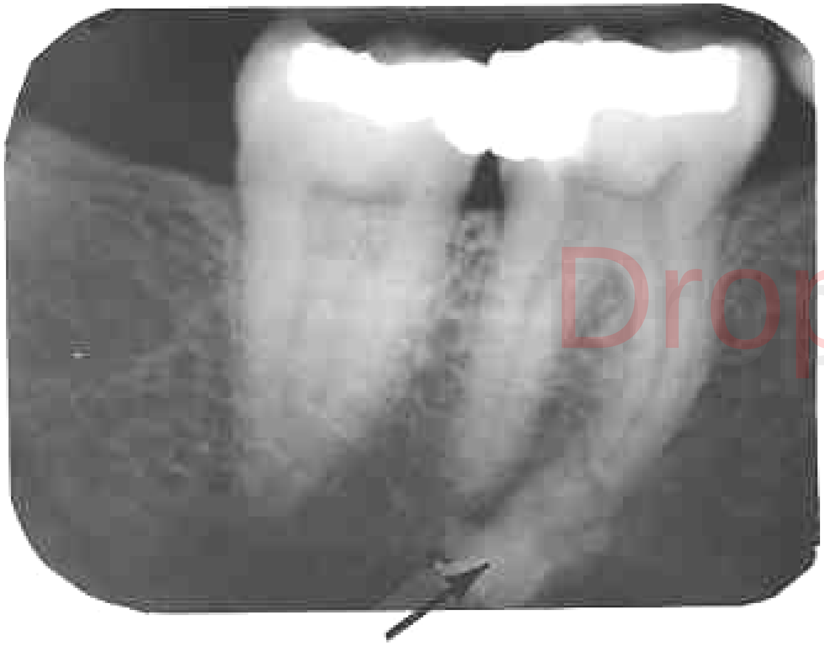


Fig. 7-32

Osteosclerosis around the walls of the nutrient canal at the apex of the mesial root of the first molar. A nutrient canal wall acts as a nidus for deposition of sclerotic bone. The involved tooth is vital.

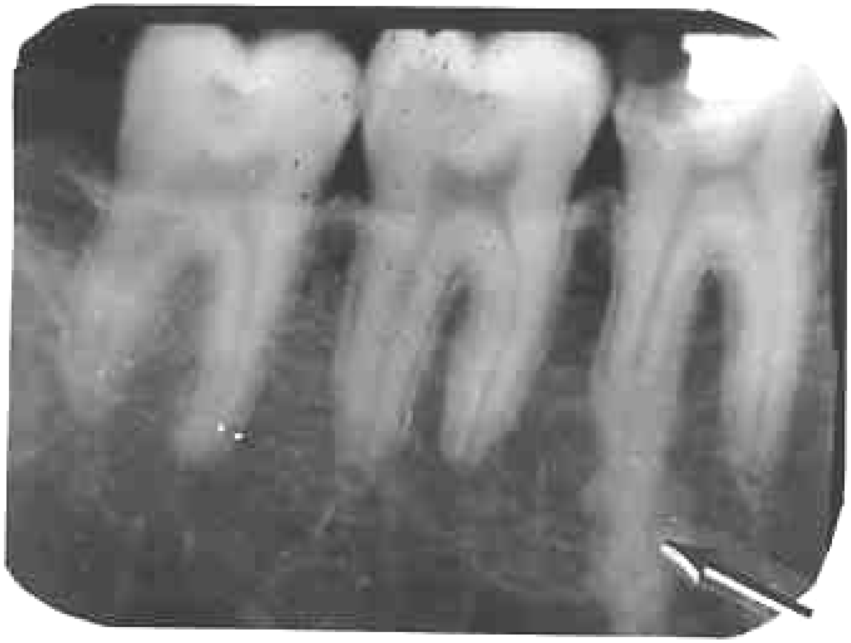


Fig. 7-33

Osteosclerosis around the walls of the nutrient canal at the distal root apex of the first molar A nutrient canal wall acts as a nidus for deposition of sclerotic bone. The involved tooth is vital.

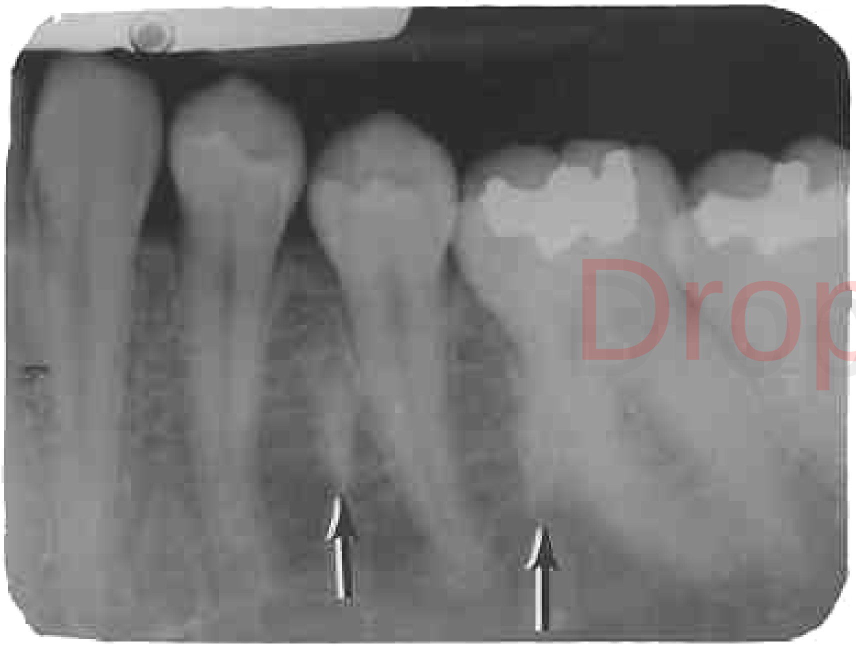


Fig. 7-34

Retained root tips of deciduous second molar. It is hypothesized that a retained deciduous root tip acts as a nidus for osteosclerosis.

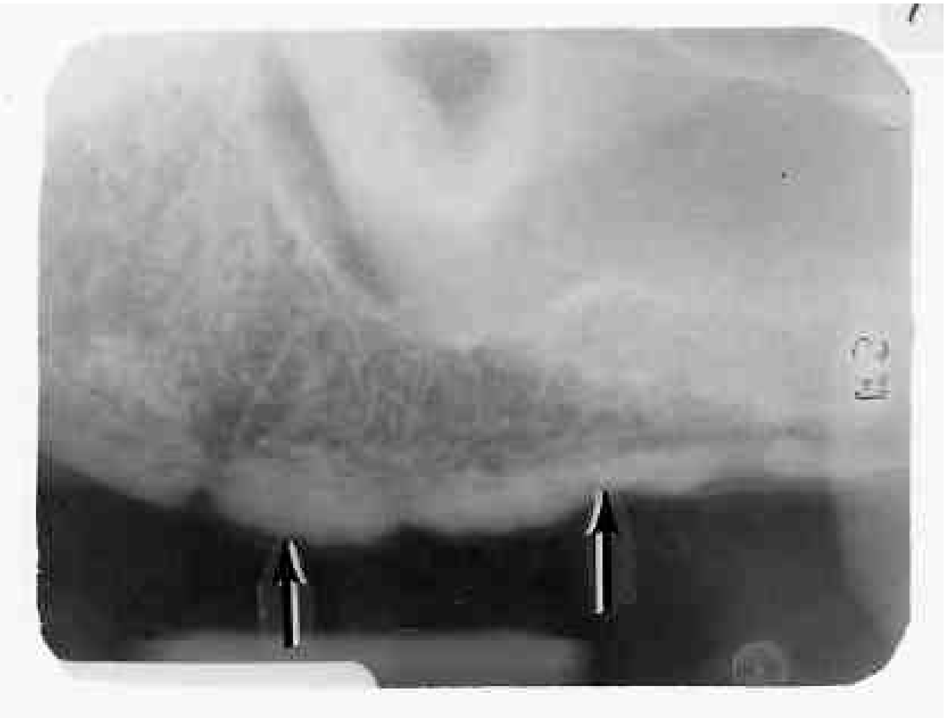


Fig. 7-35

Hyperostosis is osteosclerotic bone that appears on the crest of the alveolar ridge.

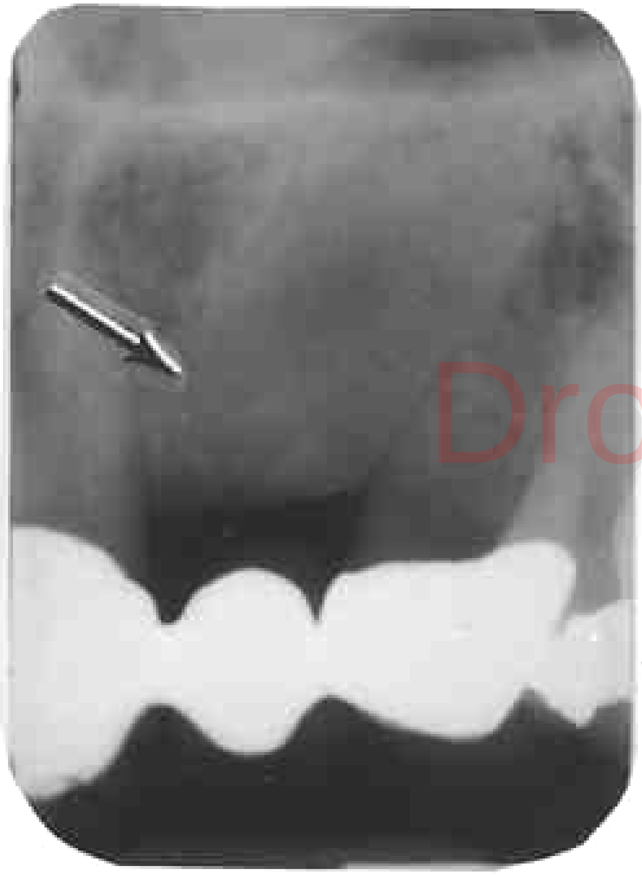


Fig. 7-36

Hyperostosis beneath a bridge pontic.

Periapical cemental dysplasia
Cementifying fibroma (ossifying fibroma)
Benign cementoblastoma
Florid osseous dysplasia

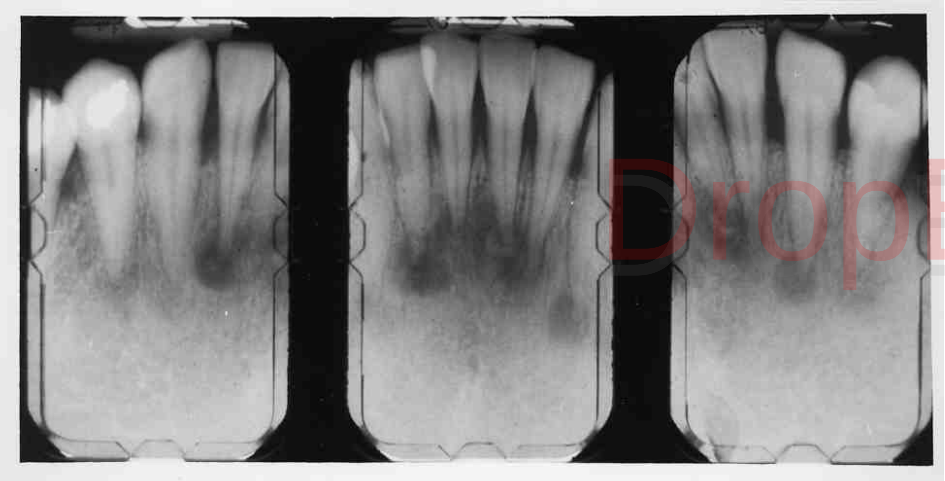


Fig. 7-37

Periapical cemental dysplasia (early stage). Multiple radiolucencies at the apices of the mandibular anterior teeth. In periapical cemental dysplasia, the teeth are vital unless otherwise involved with caries or trauma. The radiolucencies should not be misdiagnosed as inflammatory apical lesions (granulomas, cysts, abscess) in which the teeth are nonvital and maybe symptomatic.

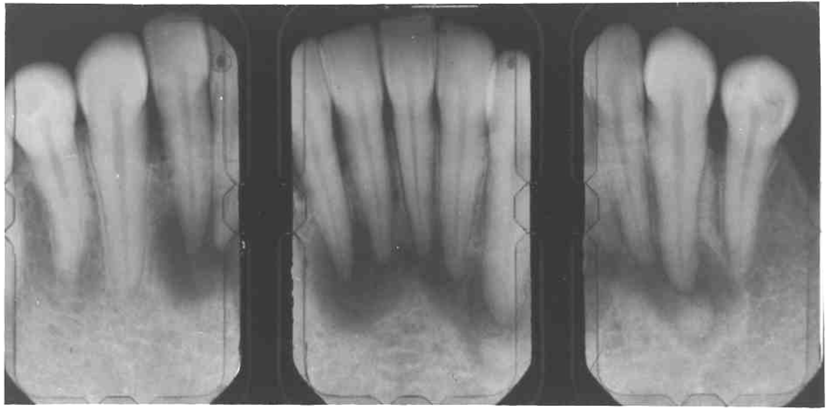


Fig. 7-38

Periapical cemental dysplasia (early stage). Unilocular large radiolucency at the apices of vital mandibular anterior teeth. The radiolucency should not be misdiagnosed as an inflammatory apical lesion. In periapical cemental dysplasia, the teeth are vital and totally asymptomatic.

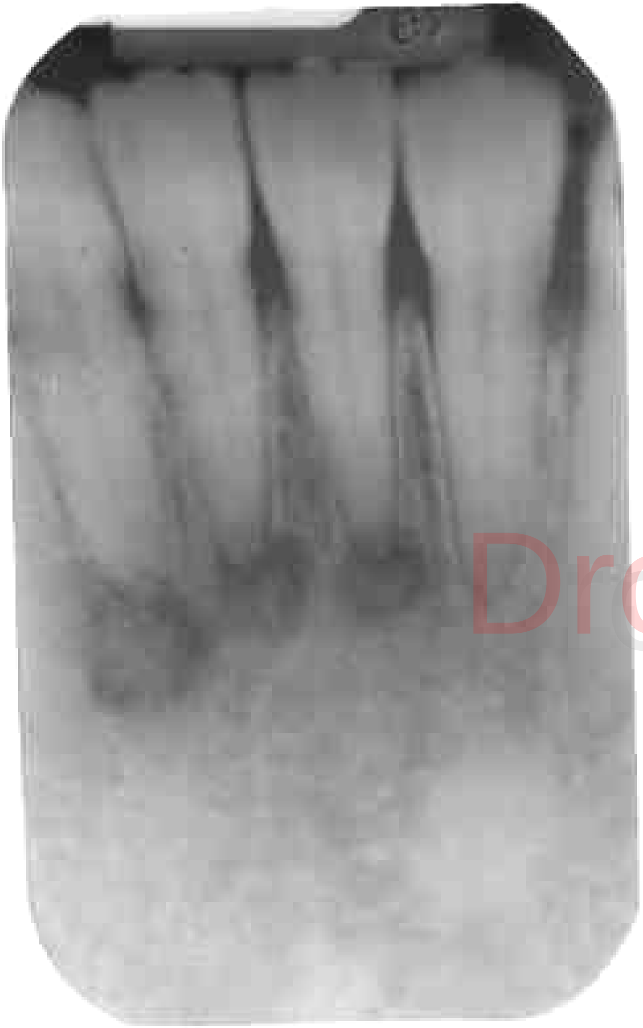


Fig. 7-39 Periapical cemental dysplasia (calcified stage). Each radiopacity is surrounded by a radiolucent border at the apices of mandibular incisor teeth.

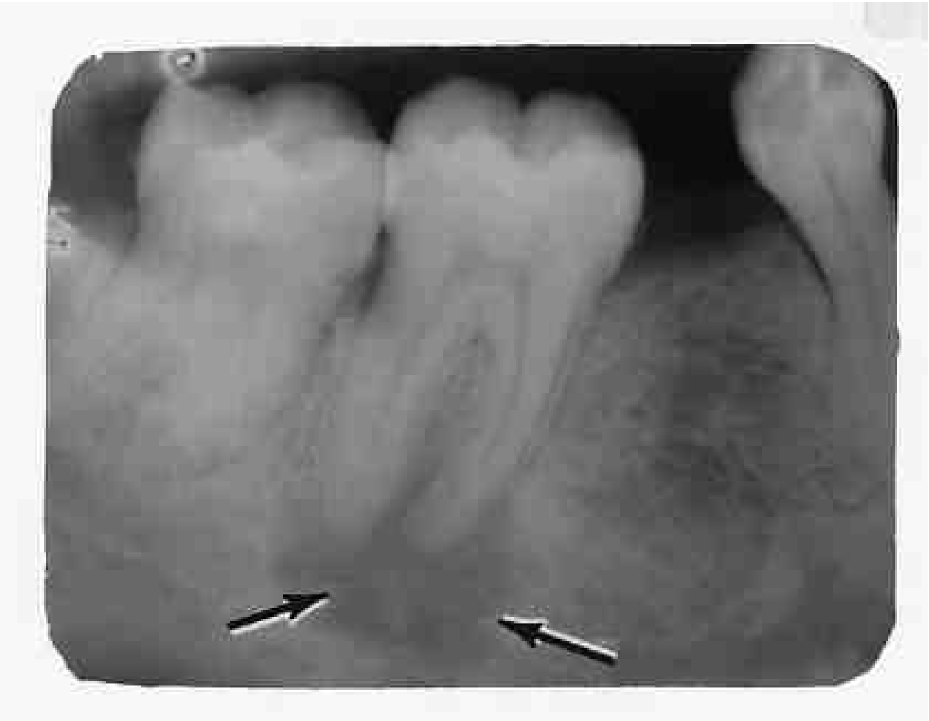


Fig. 7-40 Cementoblastoma (early stage). Unilocular circular radiolucency at the apices of the mandibular first molar. The involved tooth is vital.

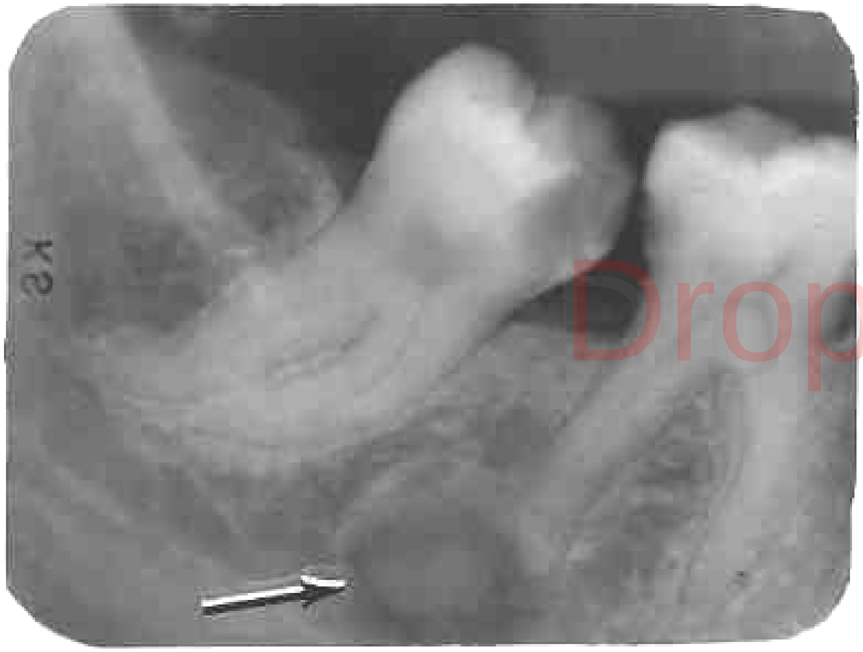


Fig. 7-41 Cementoblastoma (mixed stage). Unilocular circular radiolucency containing faint opacification. The involved tooth is vital.

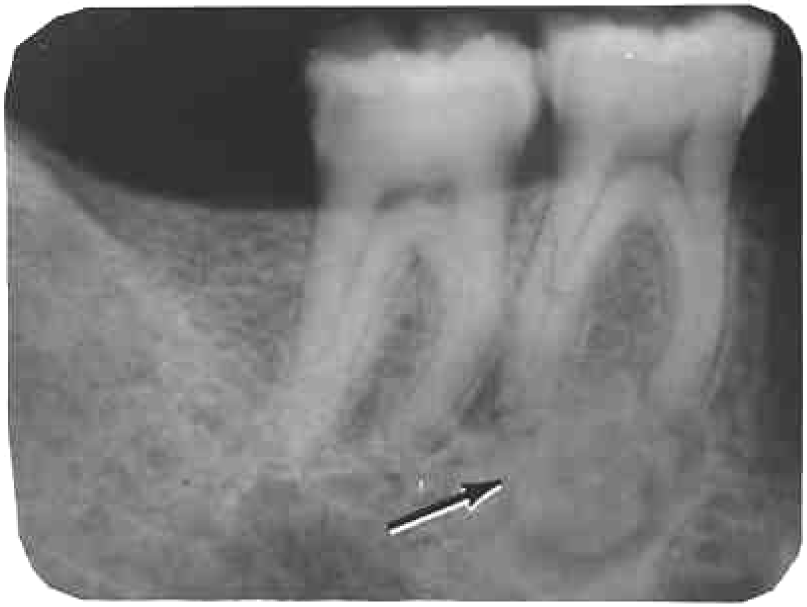


Fig. 7-42

Cementoblastoma (calcified stage). A dense circular radiopacity surrounded by a radiolucent border at the apices of the mandibular first molar. A cementoblastoma is usually discovered radiographically in the calcified stage.

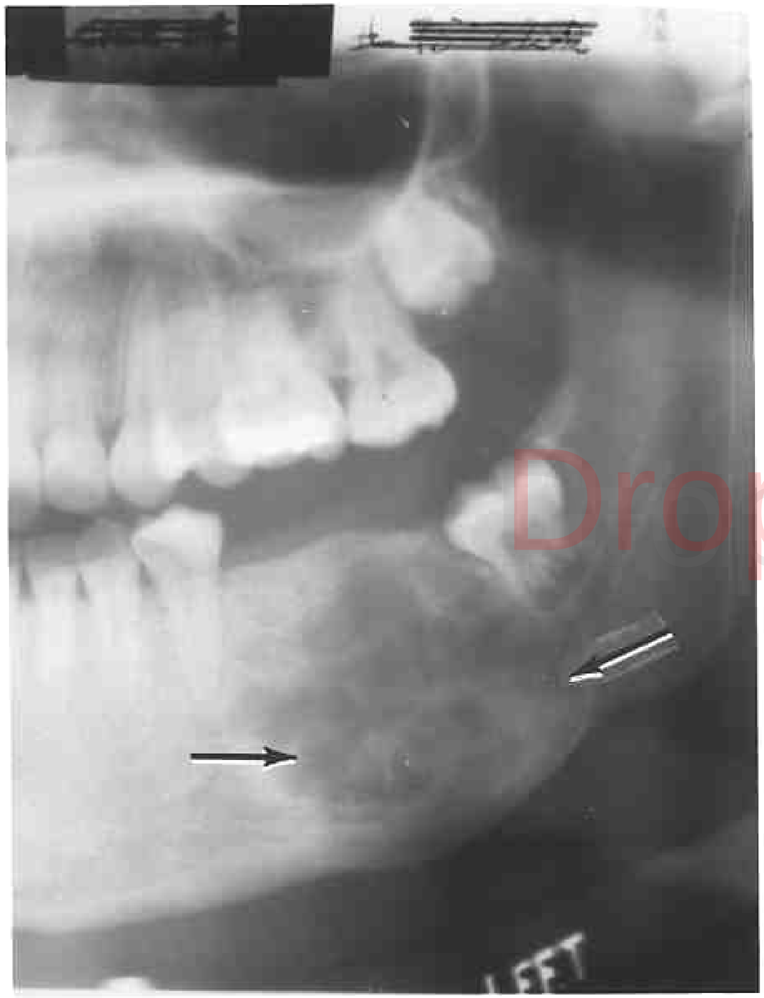


Fig. 7-43

Cementifying fibroma or ossifying fibroma (osteolytic stage) in the mandibular first and second molar region. Unilocular radiolucency containing faint opacification. Well-defined cortical margins.

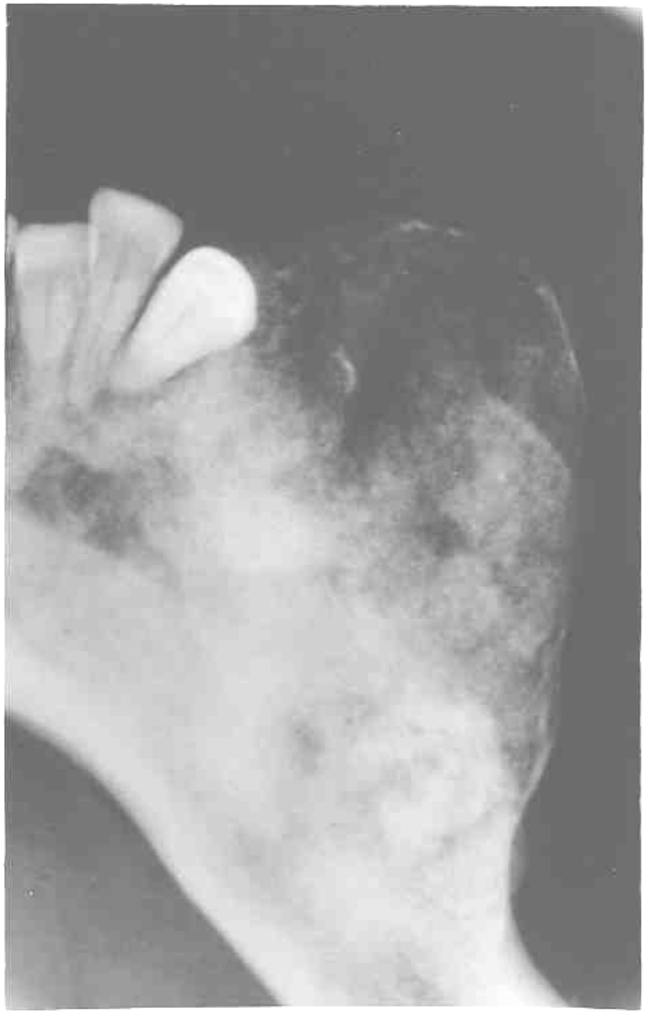


Fig. 7-44

Cementifying or ossifying fibroma (calcified stage). Occlusal view shows buccal expansion of the mixed radiopaque-radiolucent lesion.

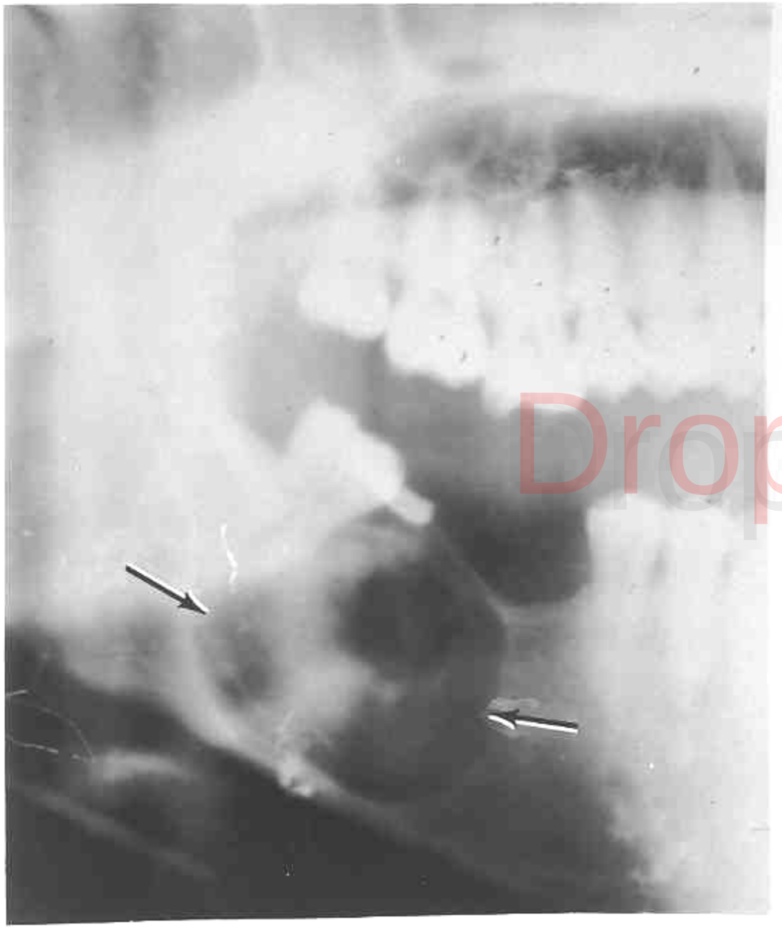


Fig. 7-45

Cemento-ossifying fibroma (mixed stage). The large unilocular radiolucency containing calcifications shows expansion of the cortical plate near the inferior border of the mandible.

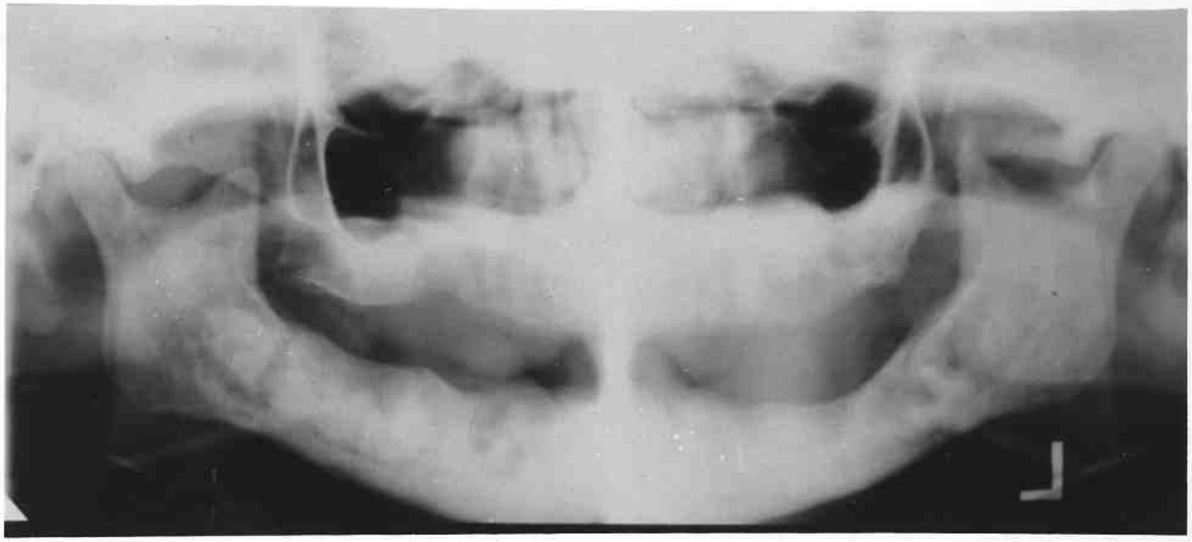


Fig. 7-46

Florid osseous dysplasia. Diffuse opaque masses with radiolucent borders involving both sides of the mandible.

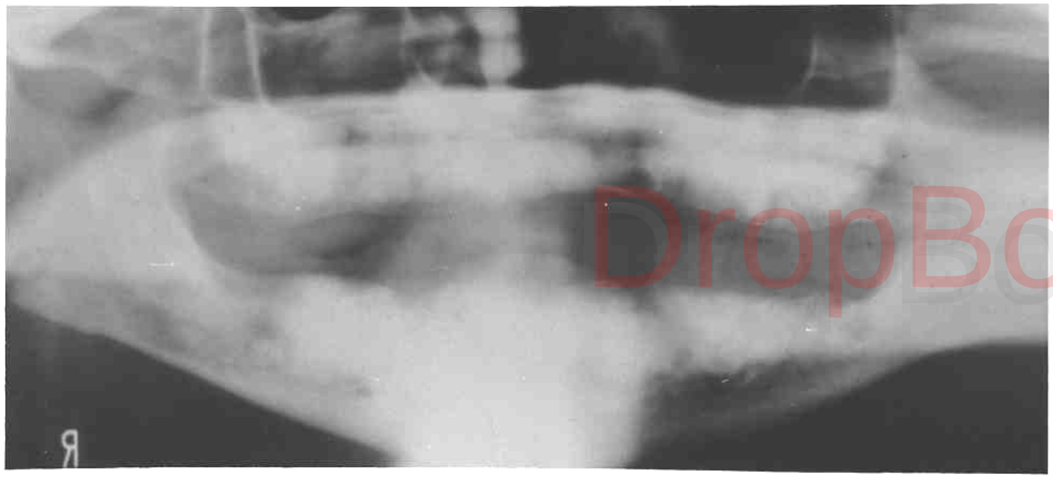


Fig. 7-47

Florid osseous dysplasia(also known as chronic diffuse sclerosing osteomyelitis). Pagetoid cotton-wool appearance with diffuse irregularly shaped radiopaque areas without any associated radiolucency and involving all four quadrants of the jaws.

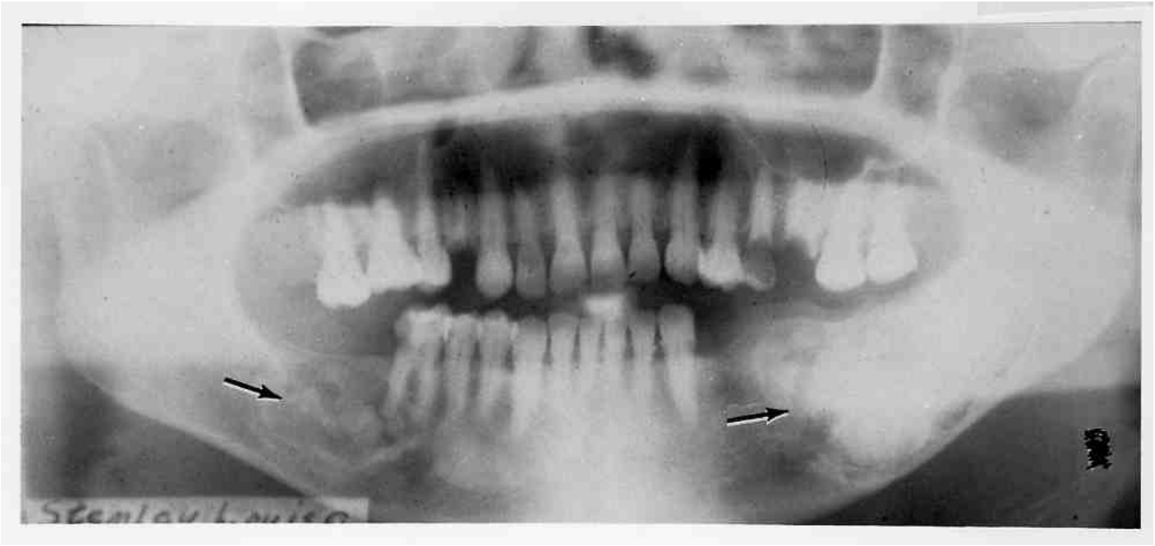


Fig. 7-48

Florid osseous dysplasia. Bilaterally located in the mandible, well-circumscribed, radiopaque masses surrounded by radiolucencies. In florid osseous dysplasia, the teeth are vital unless otherwise involved with caries or trauma.

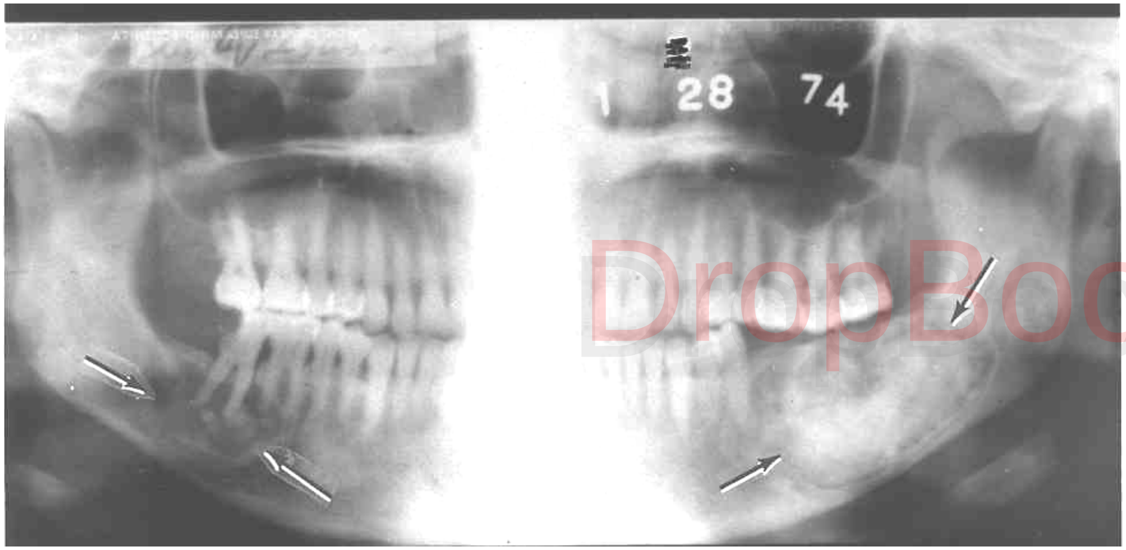


Fig. 7-49

Florid osseous dysplasia. Bilaterally located radiopaque masses surrounded by peripheral radiolucent borders similar to those of periapical cemental dysplasia.

Illusions of Apical Lesions

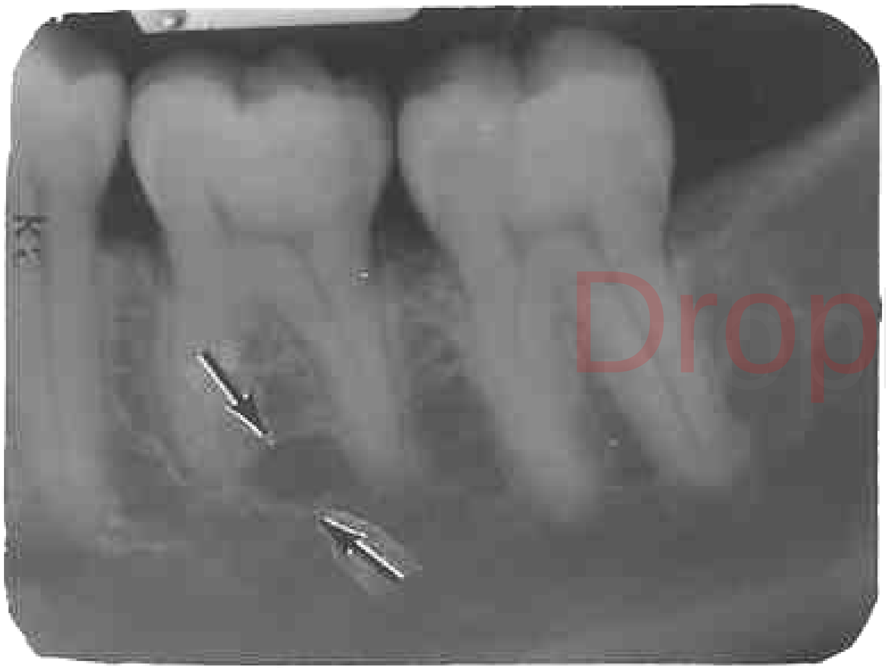


Fig. 7-50

Large medullary space (large marrow space, wide inter-trabecular space) between the roots of the first molar. May be misdiagnosed as an apical lesion.

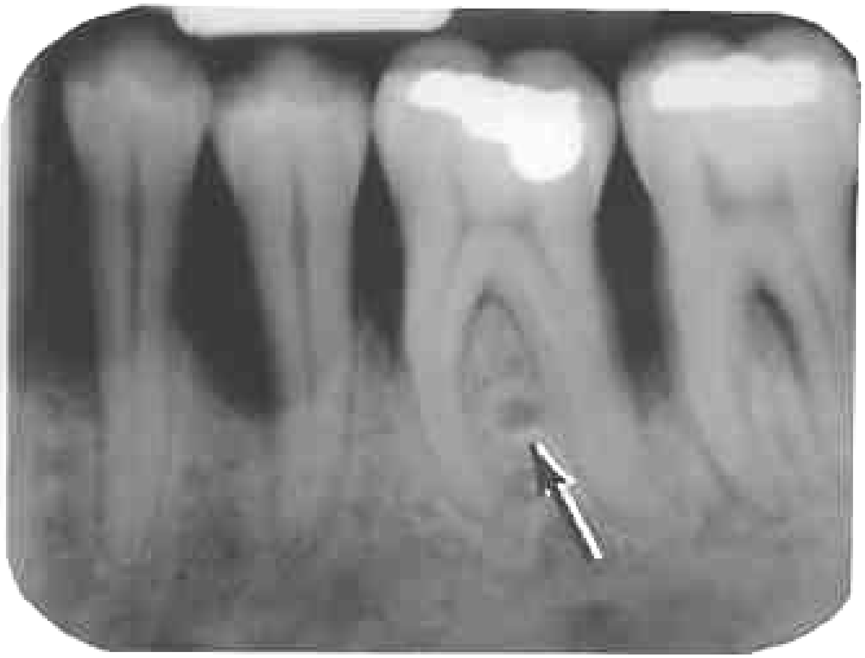


Fig. 7-51

Large medullary spaces (large marrow spaces, wide intertrabecular spaces) between the roots of the first molar. May be misdiagnosed as a lesion.

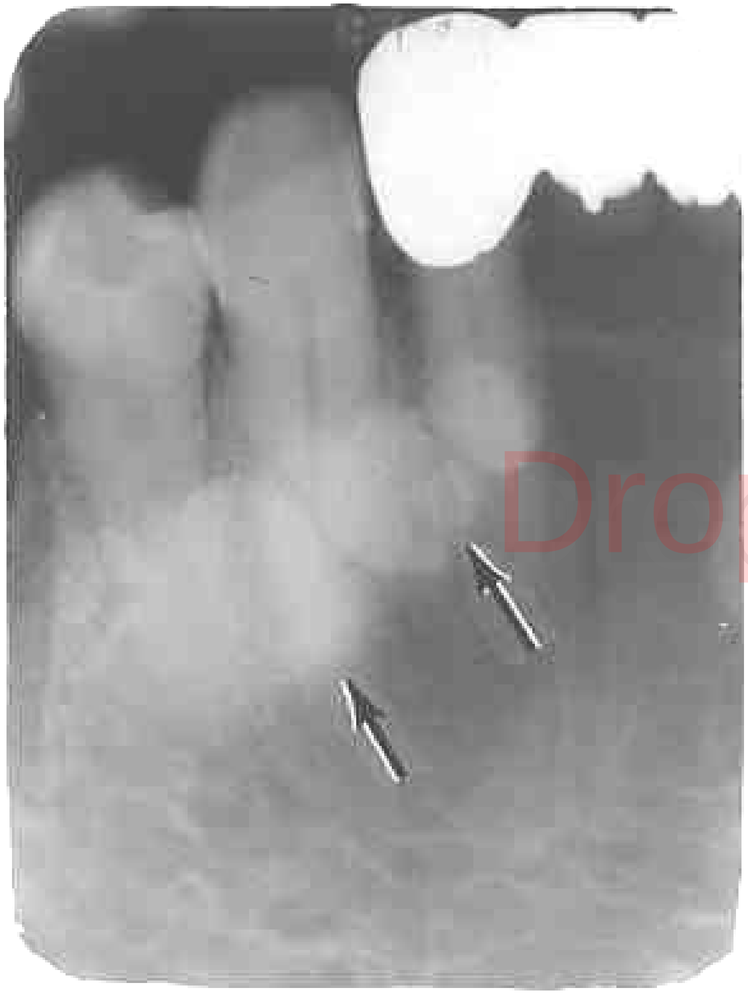


Fig. 7-52

Mandibular tori superimposed on the roots of the lateral incisor, canine and first premolar.

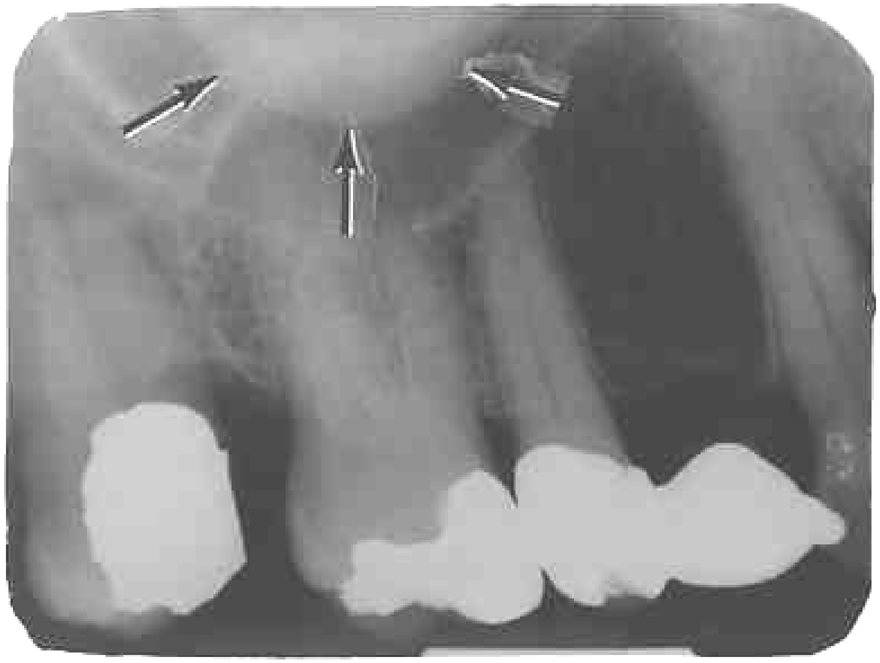


Fig. 7-53

Torus palatinus
(palatal torus).

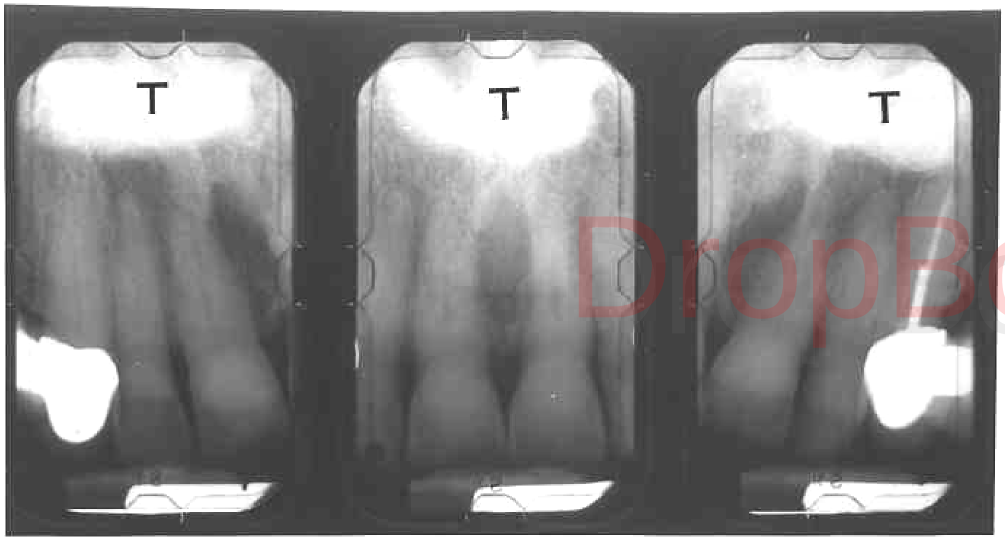


Fig. 7-54

Torus palatinus (T) as seen on anterior films. May be misdiagnosed as osteosclerosis.

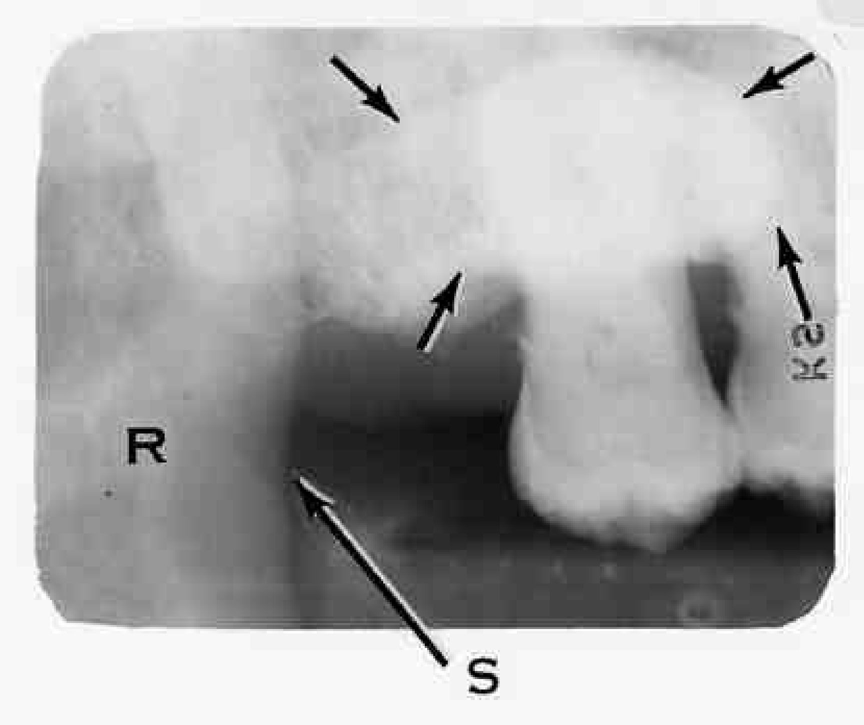


Fig. 7-55

4 small arrows — Exostosis evident on buccal surface of alveolar ridge. Exostoses are similar to torus palatinus and mandibular tori but are located on the buccal aspect of the alveolus.

R — Ramus of mandible

S — Anterior border of ramus